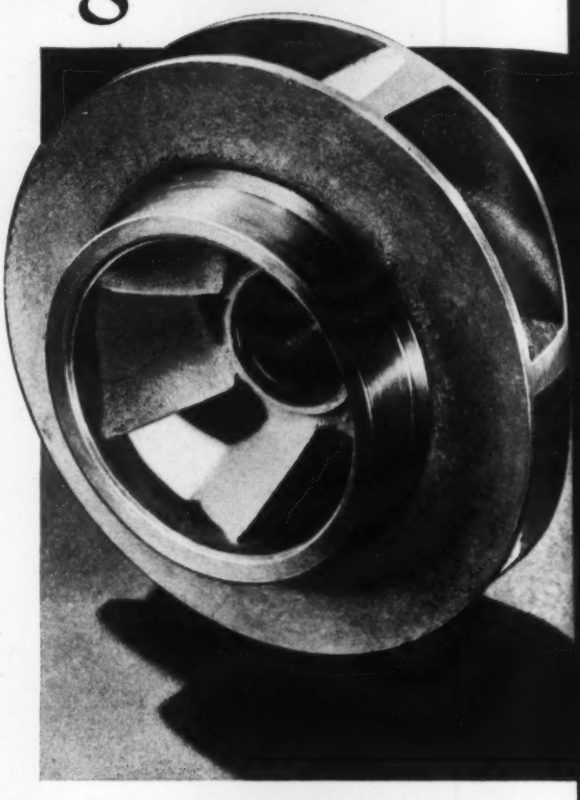
ENGINEERING NEWS-RECORD

Three span continuous arch replaces famous old Jug Bridge in Maryland.

[PUMP TIPS FROM ALLIS-CHALMERS—ONE IN A SERIES]

How to make IMPELLERS Last Longer . . .



Impellers for Allis-Chalmers "Electrifugal" pumps are supplied in bronze, stainless steel, monel metal or other materials — depending upon the *exact nature* of the liquid to be pumped.

CLEARANCES between moving and stationary parts in a centrifugal pump are very small. And when pump and its driving motor are not correctly aligned or weight of piping puts undue strain on casing, every revolution of the shaft throws tremendous extra load and extra wear on all moving parts.

In the case of pumps designed with wearing rings which are attached to the casing, misalignment causes greatly accelerated wear on both rings and impeller — reducing the effective life of both.

In an effort to eliminate the misalignment problem, A-C engineers developed, for many applications, the "Electrifugal" pump — in which *both* impeller and motor are mounted on *one* shaft and in *one* frame. In such a pump the elements cannot get out of line. Result: wear on all moving parts is greatly reduced.

Besides misalignment, there are still other factors contributing to impeller wear. Regardless of type of pumps you have, here are a few tips which can help you get longer life out of impellers . . .

▸ An often overlooked cause of impeller wear is cavitation. For if pump capacity, speed, head and suction lift aren't figured properly, cavitation can eat an impeller away fast. Here's what happens: Rapid movement of impeller blade through liquid produces a cavity behind blade; local high pressure increase drives liquid into metal with terrific force! Moral: Be sure head is right for your pump.

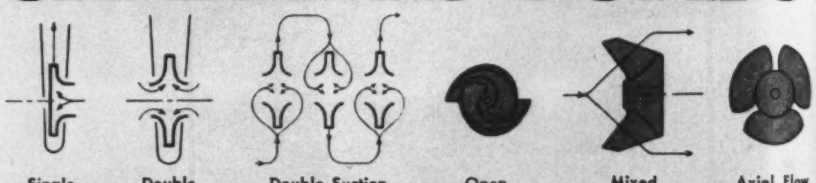
▸ If foreign matter is being sucked into your pump it can clog or wear impeller unduly. Where this condition exists, provide the intake end of suction piping with a suitable screen.

▸ When you dismantle your pumps (at least once a year), inspect impellers. If they are damaged or blade sections are corroded replace them, but *first* make a thorough search into the possible *causes* for the condition.

▸ If you haven't already done so, send for your *free* copy of "Handbook for Wartime Care of Centrifugal Pumps." This valuable booklet is packed with worthwhile information. Applies to *all* makes of pumps; contains *no* advertising. ALLIS-CHALMERS, MILWAUKEE 1, WIS. A-[illegible]

ALLIS-CHALMERS PUMPS

Allis-Chalmers builds all types and variations of pumps shown at right. Capacities from 10 to 150,000 gpm—heads to 2500 lbs.



The Week In Engineering and Construction

ENGINEERING NEWS-RECORD • DECEMBER 21, 1944 • VOLUME 133 • NUMBER 25

Federal government to share in road right-of-way costs

One-third of land costs for rural highways and arterial streets through cities to be paid from federal-aid funds for postwar highway construction

The postwar federal-aid highway bill, approved by the conference committee and passed by both houses of Congress on Dec. 12, contains a provision that one-third of the cost of acquiring rights-of-way for highways built under the provisions of that act can be paid with funds appropriated under authority of the act. Such federal participation in right-of-way costs has been advocated for some time, especially by those charged with building arterial highways through cities where land costs are high, but has been strongly opposed in Congress as contrary to the long established principle that local government agencies should purchase the land on which highways are to be built with federal aid.

This provision is expected to expand materially the amount of work that can be done in urban areas in the postwar years.

Land purchases restricted

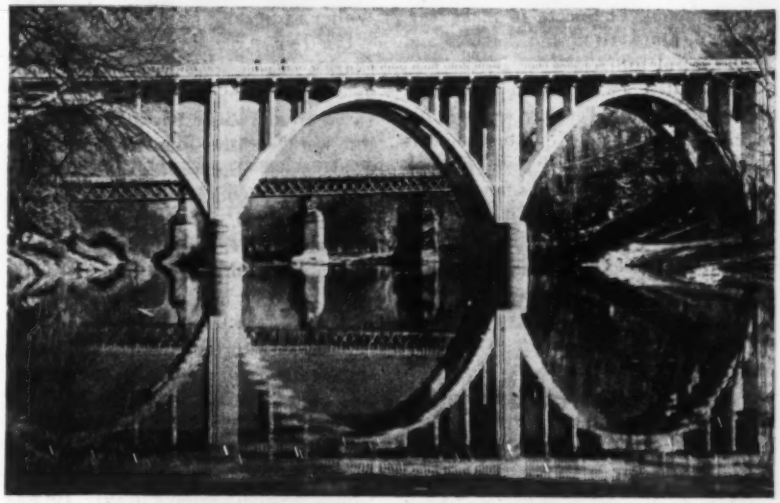
The act provides that "the Commissioner of Public Roads shall not, as a condition of approval of any project for federal aid hereunder, require any state to acquire title to, or control of, any marginal land along the proposed highway in addition to that reasonably necessary for road surfaces, median strips, gutters, ditches and side slopes and sufficient width to provide service roads for adjacent property to permit safe access at controlled locations in order to expedite traffic, promote safety, and minimize roadside parking."

Grade crossing separation

Grade separations at railroad crossings are made an exception to the one-third rate. The entire cost of grade crossing separation, including land costs, may be assessed against the federal government's share, but not more than 10 percent of that share may be so used. There is a further provision under which any benefits accruing to the railroads through the elimination of crossing protection and other recurring expenses may be assessed against the railroads.

The sum of $500,000,000 a year for each of the three successive postwar fiscal years is provided, the money to be apportioned as follows: $225,000,000 for projects on the federal-aid highway system; $150,000,000 for projects on the principal secondary and feeder roads, including farm-to-market roads, rural mail and public school bus routes, either outside of municipalities or inside of municipalities of less than 5,000 population; $125,000,000 for projects on the federal-aid highway system in urban areas. Also provided is $25,000,000 for forest highways in each of the three postwar fiscal years and $12,500,000 per year for forest roads and trails. For roads and trails in national parks there is provided $4,250,000 a year for three years, and for the construction and maintenance of parkways to give access to national parks, $10,-

(*Continued on page* 13)



Three-span concrete arch replaces Jug Bridge

A proud and colorful historical role was ended when the 136-year old Jug Bridge across the Monocacy River near Frederick, Md., was replaced by a $425,000 three span, open spandrel continuous concrete arch, which was opened to traffic on Nov. 15. Built in 1808 by Leonard Harbaugh, one of the best stonemasons of his time, and named after the huge brown demijohn placed by the builder on the eastern edge of the bridge, the old structure consisted of four stone arch spans, each about 68 ft.

Although under observation for a long time by the Engineering Department of the Maryland State Roads Commission because of noticeable deviations from true arch shape, the bridge carried traffic until March, 1942, when 20 ft. of one span dropped into the river. Subsequently the arches were taken down and temporary wooden trusses were built to accommodate light traffic during work on the near by new bridge.

Located on Highway No. 40 and providing a 28-ft. roadway and two safety curbs, the modern structure has a west span of 86 ft., with clear rise from the spring line of 35 ft. 4 in.; a center span of 98 ft. 6 in., with rise of 42 ft. 4 in.; and an east span of 111 ft., with rise of 50 ft. 2 in.

Because the old brown jug has been buried in its concrete, the new structure is still called the Jug Bridge.

Much construction work in Deficiency Bill

The Senate on Dec. 18 approved and sent to the White House a supplemental deficiency bill (H.R. 5587) carrying appropriations totalling over $480,000,000 for federal agencies. The total was larger than originally passed by the House ($399,230,312) but smaller than first passed by the Senate ($563,794,385). A conference committee arrived at the figure finally approved by the Senate on Monday, following House approval Saturday.

Over half the new appropriations will go to the Navy Department for construction work to be carried on by the Bureau of Yards and Docks. Total navy appropriation is $286,626,582.

The NHA was granted $15,000,000 for the construction of war-time housing units.

Also approved was an appropriation for the Bureau of Reclamation to continue work on several reclamation projects: Colorado-Big Thompson project in Colorado, $1,045,000; Columbia Basin project in Washington, $1,900,000; and Yakima project, Roza Division, Washington, $421,000.

Nearly $11,000,000 was appropriated for the Army Engineers to make surveys of future river and harbor and flood-control projects.

The conference report on the Rivers & Harbors bill on Tuesday was still before the Senate. The question now is whether or not it will get through Congress before it adjourns for the holidays, as it is tied up in a parliamentary jam. There is also possibility that the bill will die before both houses of Congress complete action on it.

• • •

Monthly pay is favored in Pennsylvania

A method of paying maintenance workers on a monthly or "salary" basis rather than at an hourly rate has been followed the past year by the Pennsylvania State Highway Department. The plan has proven satisfactory and will be continued during the coming year, according to Warren K. Myers, chief maintenance engineer for the department. Mr. Myers points out that the new plan is not effective for crews employed on construction, only those employed on maintenance. This is considered a big departure from the method followed by most state highway departments, and has proved to be a good morale builder by assuring the men employment throughout the year.

Today nearly 5,000 maintenance workers are paid in this way. They work a 40-hr. 5-day week. The monthly rates are as follows: Outside foremen, $155; caretakers, $144; equipment operators (heavy units), $155; equipment operators (light units), $144; skilled labor, $144; garage foreman, $194; garage mechanic, $144 to $155, and common labor, $115.

• • •

Charles Clark retires, N. Y. Water Supply head

Charles M. Clark, chief engineer of the Board of Water Supply of New York City, at his own request will retire from active work on January 1. He has served as chief engineer since 1940, succeeding the late Walter E. Spear.

Under Mr. Clark's direction, as deputy chief engineer and chief engineer, much of the work on the first section of the $300,000,000 Delaware Aqueduct has been completed. At this time the 85-mile aqueduct is ready for service throughout its entire length and part of it is in use. Work on the dam at Lackawack has been halted, however, for the duration of the war.

Starting with the Aqueduct Commission in 1893 on surveys for the Croton Reservoir, Mr. Clark rose to assistant engineer on the Cross River Dam in 1905 and in 1908 was transferred to the Board of Water Supply, becoming Croton division engineer in 1912. He was on the Shandaken tunnel and in 1921 was placed in charge of construction of the 28 siphons needed to bring the Catskill aqueduct up to its full capacity. In 1927 he was made department engineer in charge of the City Tunnel No. 2 which cost nearly $60,000,000 and became deputy chief engineer of the Board of Water Supply in 1936 when the Delaware-Roundout system was started.

Canadian engineers seek separate labor status

Representatives of all the engineering societies of Canada, whose actions regarding collective bargaining have been previously reported in these pages (*ENR* June 24, 1943, vol. p. 913, and May 18, 1944, vol. p. 724) have presented to the Minister of Labor for Canada, H. Mitchell, a draft of a new Dominion order-in-council which would exclude all professional workers from the provisions of the existing blanket order P. C. 1003, under which all workers in war industries throughout Canada are regulated with respect to collective bargaining, the order being extended in the case of some of the provinces to cover all workers.

The new draft order is based on the assumption that the professional worker occupies a position different from those of management and labor. The draft therefore suggests that professional workers should have their own labor relations board which, it is estimated, would supervise the labor relations of 40,000 professional people.

The Minister of Labor referred the draft to the National War Labor Relations Board. The board, in turn, has called a special meeting for Jan. 9 next to which the engineers, labor unions, the Canadian Manufacturers Association and other bodies have been invited to attend in order to reach a conclusion regarding the position of engineers in connection with collective bargaining.

• • •

Brazilian road official visits United States

Dr. Clovis Pestana, director general of highways of the Brazilian State of Rio Grande do Sul, is now completing a tour of the United States as guest of the Office of Inter-American Affairs and the American Road Builders Association. He arrived in October and will return to Brazil in March.

Dr. Pestana has come to the United States to study highway construction and maintenance methods and to visit the plants of some of the larger highway and automotive equipment firms. His visit is expected to be the forerunner of similar visits by highway executives from other American republics.

ENGINEERING NEWS-RECORD. Published every Thursday. **Return postage guaranteed.** Vol. 133, No. 25. Price 25c per copy. Allow at least ten days for change of address. All communications about subscriptions should be addressed to the Director of Circulation, 99-129 N. Broadway, Albany, 1, N. Y., or 330 W. 42nd Street, New York, 18, N. Y. Subscriptions, United States, U. S. Possessions and Latin American Republics, $5.00 for one year, $8.00 for two years, $10.00 for three years. Canada, $6.00 for one year, $10.00 for two years, $12.00 for three years. Great Britain and British Possessions 60 shillings for one year, 120 shillings for three years. All other countries, $10.00 for one year, $20.00 for three years. Please indicate position and company connection on all subscription orders. Entered as second-class matter October 29, 1936, at the Post Office at Albany, N. Y., under the Act of March 3, 1879. Printed in the U.S.A. Cable Address: "McGrawhill New York." Member A.B.P. Member A.B.C. Copyright 1944 by McGraw-Hill Publishing Company, Inc., James H. McGraw, Founder and Honorary Chairman; James H. McGraw, Jr., President; Howard Ehrlich, Executive Vice-President for Business Operations; John Abbink, Executive Vice-President for Editorial Operations; Curtis W. McGraw, Treasurer; Joseph A. Gerardi, Secretary; J. E. Blackburn, Jr., Circulation Manager. **Publication office: 99-129 North Broadway, Albany 1, N. Y. Editorial and Executive Offices: 330 West 42nd St., New York 18.** District Managers and Branch Offices: Fred G. Hudson, 520 N. Michigan Ave., Chicago 11; 738-9 Oliver Building, Pittsburgh; J. W. Otterson, 68 Post St., San Francisco, 4; Aldwych House, Aldwych, London, W. C. 2, England; Washington; J. M. Spackman, New York; A. B. Cozzens, Philadelphia; E. E. Duff, Jr., Cleveland; B. F. Horn, Detroit and Chicago; W. G. Payne, St. Louis; R. N. Phelan, Los Angeles; J. I. Ballard, Boston; Ralph Maultsby, Atlanta, Ga.

U. S. and Guatemala continue highway work

Relocation of more than 100 km. of the Inter-American Highway in Guatemala adjacent to the Mexican boundary and improvement of the entire route across Guatemala to standards adopted for the route generally is planned under an agreement recently executed between Guatemala and the U. S. Public Roads Administration. Participation by this country is under the Act of Dec. 26, 1941, authorizing $20 million for cooperation with Central American republics in improvement of the highway. Guatemala will pay one-third of the cost and, in addition, will provide all rights-of-way. Detailed plans for the work and cost estimates are yet to be prepared.

At present the designated route of the Inter-American Highway runs from Comitan, Mexico south to Tapachula, Mexico, and from there east to Guatemala City, Guatemala. Over practically all of this distance the route is in mountainous country. It is now proposed to change the route so that the highway will run southwest out of Comitan to Quetzaltenango, or possibly to Totonicapan, in Guatemala. This change of route shortens the distance between Comitan and Totonicapan by more than 100 kilometers. Also, it avoids much of the heavy construction cost that work in the mountains always involves. It is expected that better alignment and lighter gradients will be possible on the new line. The country through which it will run is a high plateau which resembles the upper eastern slope of the Rockies in Colorado and Wyoming.

Construction will be done by the highway department of Guatemala, using its own forces. The department is well organized and has had a good deal of experience with road construction.

In addition to the work which is to be done between Totonicapan and the Mexican boundary on the new line, modernization of the present road from Totonicapan to the El Salvador boundary is planned. This will involve some revision of heavy grades, flattering of curves, a general widening of the surfacing to the Inter-American standard, which is 6 meters, and placing a modern bituminous surface. It will take at least three years, perhaps longer, to complete this work. Every effort must be made to expedite construction if it is to be finished within that period for in Guatemala, as in other parts of Central America, construction work can be handled effectively during less than six months out of the year. Heavy rains make the use of modern construction equipment practically impossible during most of the other six months.

Guatemala has adequate modern equipment for the work. As there is a cement plant in Guatemala it is expected that much cement will be produced locally. Asphalt for the surface, also gasoline, diesel oil and lubricants must be imported. Some new bridges will be constructed. The exact number not to be determined until surveys have been completed. Probably most of these will be steel structures which will be obtained in this country. In addition, purchases in this country will include spare parts and the usual minor items required in handling a large highway construction project.

Surveys have already been started, equipment is being moved on to the site of the work and construction will begin at once.

Col. Engineer Juan de Bios Aguilar, director general of highways, is in charge of work for the Republic of Guatemala. Wallace C. A. Palmer, resident engineer, will represent the Public Roads Administration. E. W. James is head of PRA's Inter-American regional office in Washington.

• • •

Portland cement rules relaxed by WPB.

Restrictions on portland cement, which formerly limited manufacture to three specified types, were removed Nov. 25 by the War Production Board through revocation of Order L-179.

When the order was originally issued in August, 1942, requirements for portland cement for military and other essential construction work were unusually high and were expected to go higher, WPB said. Total 1942 consumption was 185,000,000 bbl., the highest consumption figure on record. The order was designed to increase production of the three most commonly used types by prohibiting manufacture of modifications of these types.

Total actual capacity of the cement industry is approximately 215,000,000 bbl. per year, WPB Building Materials Division officials said. Consumption in 1944 will amount to an estimated 40 per cent of this capacity (88,000,000 barrels); 1945 consumption, if present construction restrictions remain unchanged, is estimated at from 50 to 60 percent of capacity.

Flood prevention works in Vera Cruz state, are to be built by the Mexican Government along the Papaloapan River, which overflowed in September with disastrous results to a wide region.

Cooney chosen sales mgr. of The Austin Co.

The appointment of Laurence E. Cooney as vice president and general sales manager of The Austin Co. has been announced. Mr. Cooney joined the company in 1919. His first position was assistant to the general construction manager and he served successively as office manager, assistant district construction superintendent, district construction superintendent and assistant to the executive vice president . In 1927, he was made Cleveland district sales manager, two years later assistant district manager and in 1932 district sales manager. From 1941 to 1943, he was the project manager on Bell Aircraft Corp.'s construction and in 1943 returned as district sales manager.

Mr. Cooney is a graduate of Western Reserve University and of Case School of Applied Science. During World War I, he saw military service as a first lieutenant in the United States Army Air Corps.

• • •

Water company plans big construction program

The board of directors of the Louisville, Ky., Water Co., after a discussion with five contractors, has decided that now would be a good time to take bids on a construction program involving a filtration plant estimated to cost around $669,000, an additional pipe line from its Riverside pumping station to its water filtration plant in Crescent Hill, a distance of nearly two miles and a water softening plant. The contractors say that they could not get labor under present War Manpower Commission regulations but that the company itself might be able to obtain the necessary labor.

The company is also considering a plan to use underground water instead of surface water, which requires a great deal of treatment. However, B. E. Payne, chief engineer of the company, says that such an installation would cost a million dollars, and pumping and operating costs would average an additional $100,000 a year.

The board authorized Henry M. Gerber, its president, to seek consulting advice regarding the deep well supply plan.

Bids Opened Soon to Finish Roza Canal

Early in 1945 bids will be opened for construction of a nine-mile section of the Roza Canal, which will complete this phase of the Yakima irrigation project in the state of Washington. About 59 miles of the canal has been in service for several years; and an additional 35 miles is soon to go into operation, 85 percent of this work now being complete.

When the canal is finished, sufficient water will be available for irrigating 47,000 acres by gravity flow, and an additional 25,000 acres will be served by 26 plants pumping out of the canal; the latter work to be a postwar project.

The Yakima River is the source of supply, and the flow is delivered to the intake of the canal by the Roza Dam, a concrete diversion structure, 263 ft. long and 55 ft. high. The dam is equipped with two roller type gates,

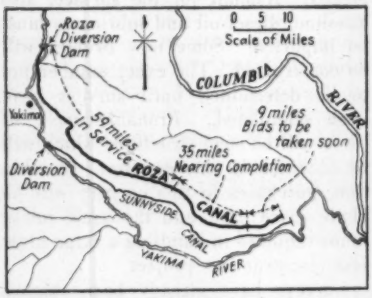


Fig. 2. Location of Roza Canal. A 59-mi. section is finished, 35 mi. is now 85 percent complete, and work on the last 9 mi. is scheduled to be started early in 1945.

each 110 ft. long and 15 ft. in diameter. It is the smallest structure where the Bureau of Reclamation has used this type of equipment. Also, of particular interest are the cylindrical screens to prevent fish from entering the irrigation canal. The fish ladder for passage up the river, can be seen at extreme right in the picture below.

On the section now under construction the terrain has necessitated eight inverted siphons across low areas on the route. Methods used for placing concrete in the open canal, the siphons and isolated accessory structures of the 35-mile project are shown in the accompanying illustrations.

The canal project is being built by the Bureau of Reclamation. H. T. Nelson is construction engineer for the bureau. Contractors on the work now in progress include: Murphy Campbell, Scheuman & Johnson, Sather & Sons, Osberg & Ludberg, Northwestern Engineering Co., and L. Coluccio Co., Macri Co., and J. K. Sandusky.

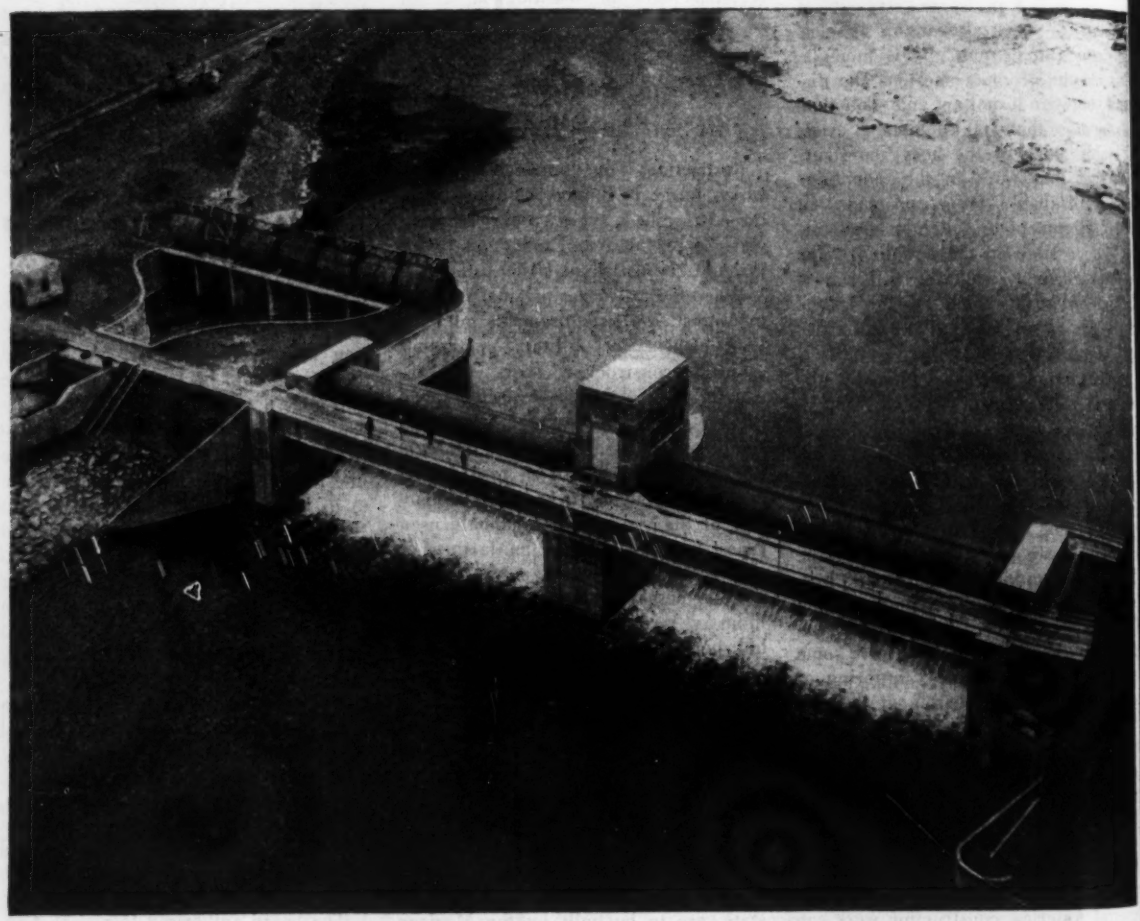
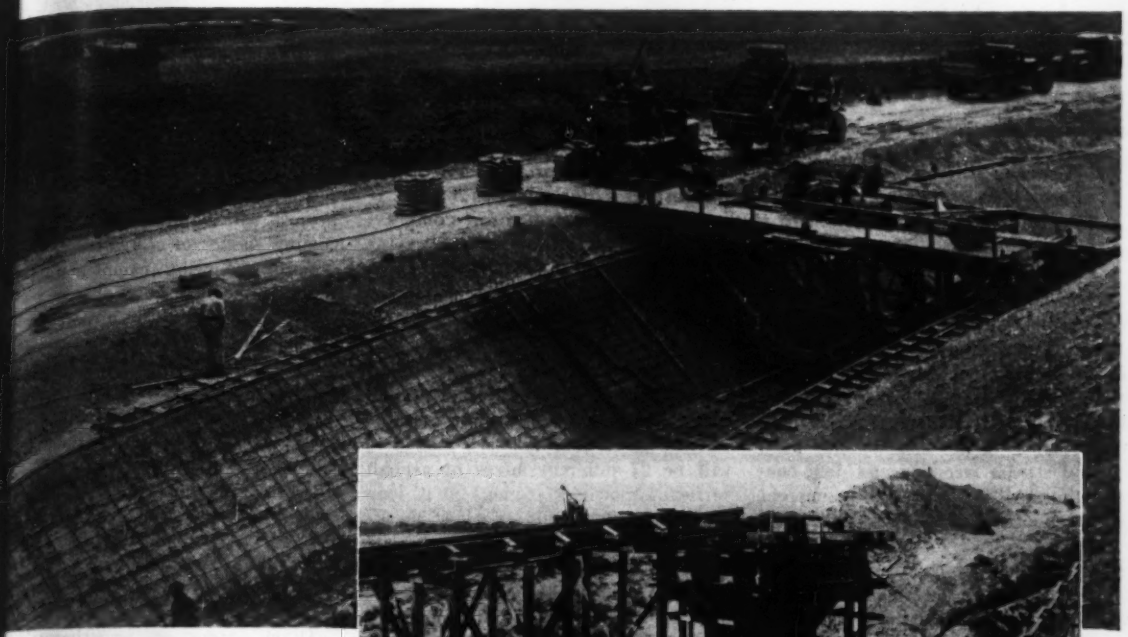
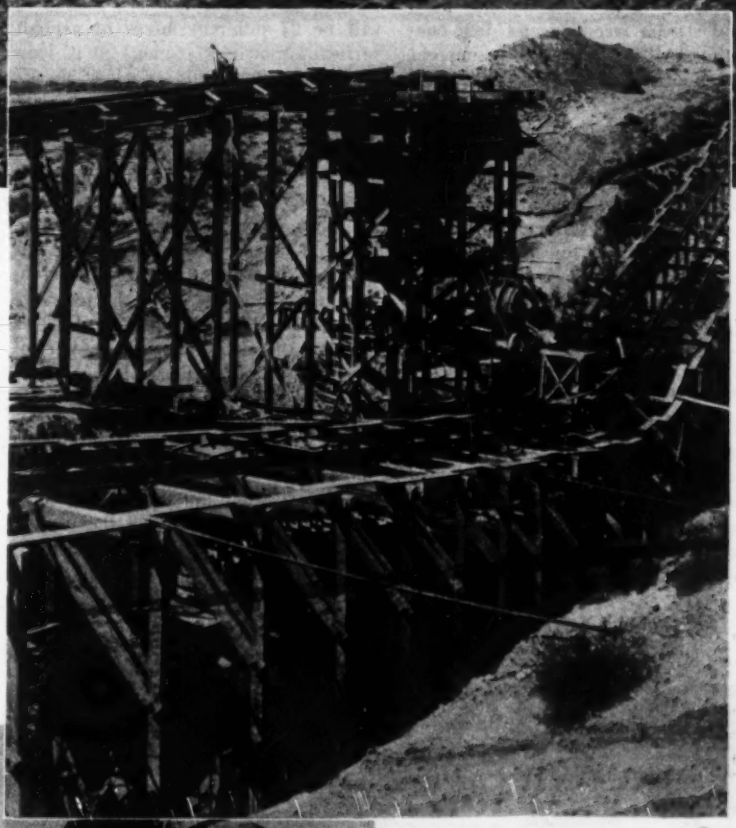


Fig. 1. Roza Dam, which diverts water from the Yakima River into the Roza Canal, is equipped with roller gates that are raised to permit passage of flood flows. Fish are prevented from entering the canal by cylindrical screens (shown here in raised position) in the widened intake structure.



ig. 3. Lining the canal. Concrete rom a paver (with boom removed) delivered by buggies and dumped hrough elephant-trunks. The bottom placed first, then each side at the me time. A curb ribbon is used for ntrol. The lining jumbo, operating short sections of track, is moved rward by a hand winch as concret- g progresses.



ig. 4. Placing concrete for a siphon. he aggregate hopper and stationary ixer supply concrete to a small car n rails, which is used to deliver it long the siphon.

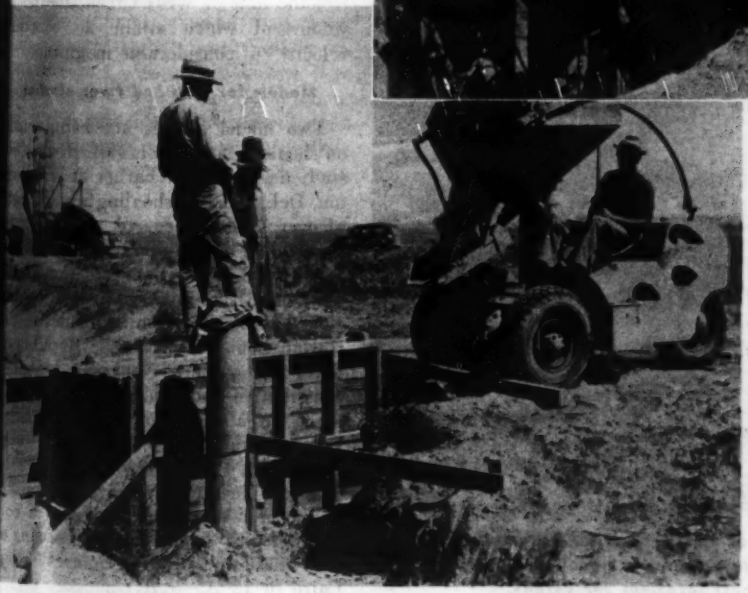


Fig. 5. Concrete for isolated structures on the lateral canals was mixed, and in most cases placed, by the mobile mixer in the background equipped with a tower and skip hoist. Small quantities of concrete were delivered to miscellaneous structures by the "Buggymobile" at the right. This unit has a ½-cu.yd. capacity hopper mounted on a hydraulic hoist so that concrete can be delivered at considerable height. The buggymobile drives on the front two wheels and steering is accomplished by swinging the lever (shown just back of operator) attached to the pivoted rear wheel.

FROM AN EDITOR'S NOTEBOOK

A recent visit to the U. S. Waterways Experiment Station at Vicksburg, Miss., revealed a number of interesting experiments that are being conducted in relation to studies of airport runways, soil compaction, bituminous impregnated materials, and flood control.

Vicksburg, Miss.—Despite a sharp reduction in operating personnel, the U. S. Waterways Experiment Station at Vicksburg is busily engaged in a wide variety of experiments designed to expedite postwar planning in airfield construction, soils compaction, flood control stream meander and dam construction. All in addition to its current investigations of methods and materials used in U. S. Army Engineer construction, many of which are still in the secret stage. Early completion of many of the current investigations is of paramount importance, since results obtained will have a direct bearing on postwar planning by the several district offices of the Corps of Engineers, U. S. Army, according to G. H. Matthes, who is director of the Waterways Experiment Station.

Investigation of airport runways

Probably the most important experiment, just getting under way at the station, is an extensive investigation of the character and thickness of asphalt runways and crushed stone bases designed to support three different airplane wheel loadings: 15,000 lb., 37,000 lb. and 60,000 lb. The site chosen for the test area is 120 ft. wide and 850 ft. long, with an additional 180-ft. long turning area at each end.

An interview with W. K. Boyd, chief of the flexible-pavement branch of the experiment station, disclosed that there will be 27 different mixes of asphalt surfacing placed in sections 30 ft. long and about 20 ft. wide. Each of the 27 basic gradings will be mixed with asphaltic oils of high, medium and low stability, making 81 separate tests in all. In addition, three different type bases—high type commercial, average to medium, and low grade—are being installed to carry the test sections, all corresponding to the three different wheel loadings for which the tests are designed.

The ultimate supporting power of the several combinations of base structure and asphalt mat will be determined by actual test loads with failures being calibrated on the weight sustained and number of passages of the load. From this information the theoretical thickness and character of both the asphalt mat and supporting base can be determined for any airport runway whose design requirements fall within the limits of the tests.

Pertinent information relative to bituminous asphalt highway surfaces are expected to be a byproduct of these tests.

A detailed report on this experimental project will be published in a forthcoming issue of *Engineering News-Record*, following completion of the initial series of tests.

In connection with airport runway studies the experiment station is just starting a comprehensive study of soil compaction, to determine a true correlation between laboratory assumptions and field results. Of equal importance is the continuous job of investigating all types of failures of military airport runways —determining why they failed, how best to repair them and what changes in design are needed.

Bituminous impregnated materials

Other important experimental investigations which will have considerable bearing on postwar construction deal with prefabricated bituminous impregnation of cotton duck, sacking material and burlap, as well as the checking of manufacturers' claims pertaining to the several types of water repellent admixtures for these materials now on the market.

Flood control at Cumberland, Md.

In the field of flood control, studies are just getting underway and are expected to be completed within a year on the flood control situation at Cumberland, Md. The situation there, according to Capt. J. B. Tiffany, assistant director of the Waterways Experimental Station, parallels the flood control problem at Johnstown, Pa. Chief problem is to control the flow of Wills Creek, the floodwaters of which attain a "shooting velocity" of considerable magnitude.

Models for dam and river studies

Two model studies are being made on shoaling in the Delaware River. One study deals with the harbor at Wilmington, Del., which is shoaling up at a rate of over 1,000,000 cu. yd. per year. In the field of dam studies, a model of the proposed Detroit Dam on the North Santiam River, in Oregon, is receiving considerable attention. A model of the Harlan County Dam on the Republican River in southern Nebraska is under construction and studies also are being made on a model of the Conemaugh Dam on the Conemaugh River near Pittsburgh, Pa.

Several investigations are being made in the field of stream meander in correlation with the proposed deepening of the Mississippi River channel below Cairo to 12 A.—*J. R. C.*

The U. S. Waterways Experiment Station at Vicksburg, Miss., has unusual facilities for hydraulic studies on a large scale. Here shown is model of a section of the Mississippi River built to determine the best locations for cutoffs.

Many flood control projects considered

In addition to the discussion of the proposed Missouri Valley Authority now recommended by the President, engineers and regional planners are now giving considerable attention to flood control proposals and projects in various sections of the country, among them the following:

Louisville, Ky.—Work on flood protection and navigation projects in Louisville area will be resumed as soon as engineering staff, men and materials are available, Lt. Col. J. H. Veal, U. S. Engineers, in charge of the Louisville District, announced recently.

This means that planning such projects, interrupted by the war, has been resumed and that actual construction may start before the war ends, Colonel Veal said.

Priority is being given to projects already started. Among these are the Paducah floodwall; the Mount City, Ill., levee projects diverting the Cache River; the Evansville, Ind., and Harrisburg, Ill., flood protection projects; the Breevoort Levee near Vincennes, Ind.; Levee Unit 8 near Washington, Ind.; and further work on the Jeffersonville-Clarksville wall.

New England—After debate on flood control projects in the Connecticut River Basin, especially those in Vermont, the Senate on Nov. 29 approved a compromise worked out by Senators Austin and Aiken of Vermont, Senator Walsh and Weeks of Massachusetts, and Maloney and Danaher of Connecticut.

Of five questioned projects for flood control in Vermont, Senator Austin said, one was a major issue—the proposal to build a dam on the West River at Dummerston at a cost of some $8,400,000.

In place of this one project, Senator Austin explained, consent had been gained among the half dozen Senators to an alternative plan set up by the Vermont Water Conservation Commission, which proposes the construction of eight smaller dams at various points farther up the West River, at an estimated cost of $9,440,000.

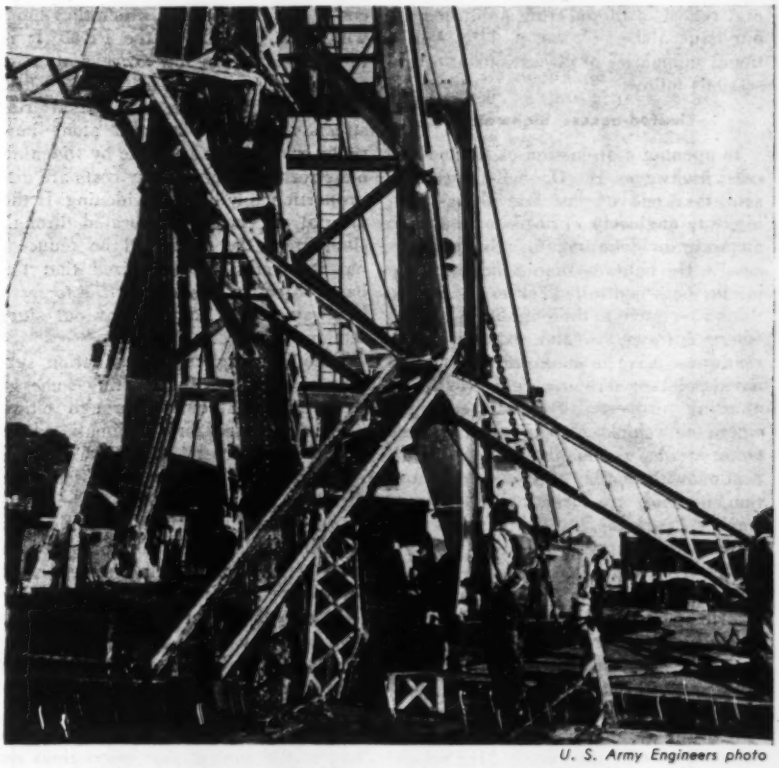
Arkansas—Representatives of Cross, Poinsett, Lee and St. Francis counties, in Arkansas, present at a hearing on drainage of L'Anguille River and its tributaries held at Wynne on Nov. 22, said that the counties would maintain the ditches and furnish the right-of-way necessary for them if the ditches are constructed by the Federal government. The meeting was presided over by Col. E. W. Miller of the U. S. District Engineer office at Memphis, who said that the data assembled at the hearing will be submitted to the Washington office of the United States Engineers for early consideration and action.

Wabash River Basin—Fifty-six separate projects to improve flood control in the Wabash River Basin received general approval after a public hearing in Terre Haute, Ind., on Nov. 21.

The projects were included in a report containing recommendations made by the Army Engineers' district staff based at Louisville, Ky.

At least 500 men from all parts of the Wabash Valley in Indiana and from several Illinois districts were present, as well as the new Indiana Flood Control Commission, named by Gov. Henry F. Schricker to co-ordinate conservation work and water control in the state. The meeting was conducted by Col. C. L. Hall, division engineer of the Army Corps of Engineers, with headquarters at Columbus, Ohio.

Final Army action on the proposed plans will be withheld until the end of the year.



U. S. Army Engineers photo

Bridge salvage half completed at Chester, Ill.

Removal of the final sections of twisted steel from the easterly span of the overturned 2-lane highway bridge over the Mississippi River at Chester, Ill., was completed on October 17 to provide a clear navigation channel 670 ft. wide and 17 ft. deep below zero elevation on the Chester gage. Despite the hazardousness of the work, this 670-ft. span was removed in 35 working days and without a single lost-time accident.

Rising waters caused salvage operations to be suspended twice; once, the day following complete removal of the initial 300 lin. ft. of bridge lying near the eastern shore (ENR Oct. 5, vol. p. 429) when the river's depth exceeded the length of anchor spuds of the U. S. Army Engineers' derrick boat Hercules, and again during a part of the Worlds Series, much to the delight of those workers who were lucky enough to have tickets to the ball games.

Contract cost of removing the east span was $100,000, less the value of the salvaged steel. To this cost, however, should be added Government cost of $29,710 which includes the operational cost of the Hercules which assisted in the work. Salvage operations have been under the direct supervision of Col. L. B. Feagin, district engineer, St. Louis District, U. S. Army Engineers. Removal of the steel was by the Massman Construction Co., Kansas City, Mo. The west span still remains submerged and no plans have been made for its removal.

Limited-access highways considered at meeting of state highway officials

Discussion groups at A.A.S.H.O. meeting take up questions raised in planning postwar highways and maintenance problems.

A variety of problems involved in planning for postwar highway construction as well as some raised in maintaining existing roads were brought up for discussion at the annual meeting of the American Association of State Highway Officials held at Cincinnati Ohio, Nov. 28-30. Notes on a part of these discussions were given in the general report of the meeting published in our issue of Dec. 7, vol. p. 716. Additional summaries of discussions at other sessions follow.

Limited-access highways

In opening a discussion of limited-access highways, H. O. Schermerhorn, said that one of the first things for highway engineers to do is to establish an accurate definition for "limited access". He believes that a better term might be "controlled access" as he thinks of such a thoroughfare as one where entrance to and exit from its roadways may be had only at designated points, where no access to or from abutting property is permitted and where no vehicle may cross at grade. Other terms commonly used in connection with similar types of construction, he said, are "freeway", "expressway", "parkway", "thruway" and "boulevards".

New York State is now making plans for the construction of 540 miles of what it calls "thruways" in the postwar period. These are being laid out so that they pass through the outskirts of cities and through submarginal land where that is possible in rural regions. One of the problems that have arisen in connection with this work, Mr. Schermerhorn said, is the severance of properties by limited-access highways in agricultural areas. Farm land thus cut off may be so isolated as to be of no use to the owner, thus increasing the cost of obtaining rights-of-way.

A major problem in Maryland, according to Ezra B. Whitman, chairman of the Maryland Commission, is the anticipated cost of acquiring access rights along two existing dual highways that should be converted into limited-access routes to increase their capacity. Had that been done when the roads were laid out the cost would not have been greatly increased, but now a ribbon development has sprung up and the cost of acquiring the access rights appears almost prohibitive.

Another problem cited by Mr. Whitman is that of adding grade separations at intersections that were not separated when the road was built. At one point where the PRA recommended a cloverleaf separation the cost went up to one million dollars, due chiefly to right-of-way costs. The Maryland department now has worked out a less costly layout for others which they hope will be acceptable to the PRA. It is for cross traffic of low average volume.

In cities, according to Hal G. Sours, director of highways in Ohio, arterial streets should be laid out along new routes rather than be made by widening old streets, as right-of-way costs are disproportionately high in widening. If the arterial streets can be located through slum areas the costs will be reduced, but it should be recognized that the basic objective of such work is to serve highway needs, not to clear out slum sections of the city.

Ohio is using origin-destination surveys as the basis for locating some of its proposed freeways through cities. One is proposed for Cincinnati, which is expected to cost $100,000. Costs will be shared by Kentucky, to which state the projected route extends. The value of these origin-destination studies in planning such routes as compared to traffic counts on existing streets, said Mr. Sours, is that they are reasonably free from the effect of change in route of travel that comes when a new route is made available to the traveling public.

M. J. Hoffman, commissioner of highways from Minnesota, asked what influence the current war restrictions on travel would have on origin-destination surveys. Mr. Sours was unable to answer definitely, but expressed the belief that the Public Roads Administration had developed a factor to be applied to offset any effect there might be.

Michigan expressways

Detail plans for a comprehensive system of limited-access expressways are being formulated for early postwar construction in Detroit through a tripartite agreement between Wayne County, Michigan; the Michigan State Highway Department and the City of Detroit, according to Harry A. Shuptrine, bridge engineer of Wayne County.

Chief projects include the north-south John C. Lodge Expressway and the east-west Crosstown Expressway e timated to cost a total o $100,000,00 Completion of the first section of ea of these two projects will provide direct connection between the easter terminus of the recently completed D troit Industrial Expressway and th city's downtown district. Right-of-w is being secured and construction fun are being set aside in the ratio of on half by the state and one-quarter ea by the city and the county. All co struction will be paid for on a pay-a you-go basis, said Mr. Shuptrine. (D tails of the proposed John C. Lod Expressway will be described in the Ja 11 issue of *Engineerings News-Record*.

Several reasons were advanced Mr. Shuptrine for the necessity of fe eral participation in the acquisition rights-of-way in such types of city ar urban expressway development comin under the status of federal-aid co struction. One of the main factors determining any proposed route throu a highly developed area is the tr mendous cost of right-of-way.

The lack of federal funds to help d fray such costs undoubtedly will infl ence both the location and types of co struction, asserted Mr. Shuptrine. Fu thermore, the condemnation of right-o way for an intercity expressway necessarily the first undertaking i volved and the meeting of such cos entirely by a municipality becomes a insuperable barrier to early constru tion, he said.

Lowering the cost of utility change

Designers of depressed expressway were urged by W. Earle Andrews, co sulting engineer, New York City, t prepare preliminary plans covering pr posed changes in major public and pri vate utilities as soon as the alignmen and grade are established to a rea sonable degree. Such procedure, sai he, will expedite negotiations with th several agencies as it affords them longer period in which their staffs ma analyze the problems involved.

Relocation of existing sewage colle tion and stormwater drainage system usually play a major role in depresse expressway or subway design, said Mr Andrews. He also suggested the follow ing general principles as a guide: (1) Existing drainage areas should be main tained if at all practicable in order t avoid construction of additional larg trunk sewers. (2) Inverted siphons ar to be avoided and used only as a las resort in view of the danger of stoppag resulting in the flooding of private prop erty or the new improvement. Avoid ing the use of inverted siphons even a a considerably greater cost can be read ily justified, he said.

Other suggestions by Mr. Andrew

ded the avoidance of pumping sta- in connection with expressway de- whenever possible, on account of r expensive construction and the irement for constant maintenance. making slight adjustments in the ile or alignment, the necessity for e trunk sewers located far below nd often can be avoided, he said.

o illustrate the magnitude of utility sion in expressway construction Mr. drews pointed out that the cost of oving, maintaining and restoring all blicly-owned utilities, including the lighting and stormwater drainage ems and excluding the privately- ed utilities on the proposed Cross- x Expressway in New York City, stimated to cost $2,500,000. This re represents 12 percent of the total truction cost, he said.

Advantages of aerial surveys

erial surveys are being used with an reasing amount of success in the nning and location of Kansas high- s, declared Paul Martin, engineer design, Kansas State Highway De- rtment. They also are proving very ctive in making bridge surveys and e materially reduced the amount of liminary ground surveys formerly uired in this work. Of equal impor- ce is the application of photogram- try in the preliminary determination hanges in types of soils along pro- ed highway routes, said Mr. Martin, the location of gravel deposits g old river beds are easily deter- ed by the use of these aerial photo- phs, he added.

hat aerial photographs are suffi- tly accurate for preliminary high- location surveys was brought out in paper on highway construction in r Mountain Park, New York, by nuel Nelson, deputy chief engineer of Palisades Interstate Park Commis- . Road grading quantities can be puted to an acceptable degree of ac- acy from cross-sections established aerial photography at locations re the terrain does not change too uptly. To establish this fact, said Nelson, quantities for a one-mile ion of grading were computed using s-sections established from both al and ground surveys. Results dis- ed the average variation between the methods did not exceed 4.2 per- t.

Use of outside consultants

Discussion of the advantages of using ide consultants for some types of hway work was opened by Spencer ler, Jr., chairman of the New Jer- Commission. Such consultants, he d, can be of assistance to highway artments whose planning of postwar work has fallen behind due to de- pleted staff.

Consultants, said Mr. Miller, can bring to a project a detached, objective view that often is very desirable. Also, they provide a certain amount of stimu- lation to the staff.

New Jersey has always engaged out- side consultants for movable bridge work. Mr. Miller thinks that there may be advantages in employing outside con- sultants for very large projects involv- ing unusual expenditures as a means for giving the public added assurance that the project is sound. He believes that they could also be used to advan- tage to review plans made by the de- partment for large projects.

Unprecedented boldness and a great deal of imagination, said Mr. Miller, must be applied to the location and de- sign of highway routes into and through the large cities. Engagement of experi- enced consultants for such work should be profitable in the industrial states, in his opinion, at least at the start of the work.

Support for this view was given by Mr. Whitman. He cited a recent con- tract for such work let in Maryland where the total cost is so large that the consulting engineers fee will be over $700,000, a fact which caused the Gov- ernor to make an investigation of it before approving the contract (*ENR* Nov. 9, p. 594).

G. T. McCoy, state highway engineer of California, said that his department had solved this problem in the Los Angeles area by hiring the city's en- gineering department to design the free- ways through that region.

Resurfacing old concrete

Old concrete pavements in Ohio are wearing out at such a rapid rate as to make immediate replacement of all of them impractical, according to H. D. Metcalf, chief of the Bureau of Main- tenance. As a consequence the high- way department has been giving close attention to salvaging the ones that are in bad condition and to checking de- terioration of pavements showing the effect of traffic wear.

Although a considerable part of this mileage is made up of brick and bitu- minous pavements, Mr. Metcalf cen- tered his remarks on the old concrete pavement.

Where pumping at joints has devel- oped, that condition is corrected by mud-jacking using soil and cement or liquid bituminous materials, or by sub- sealing with asphalt. On this latter work Ohio is developing a method of subsealing with asphalt that has much promise. Relatively hard hot asphalt is forced under the pavements, which when it cools gives the pavement sub- stantial support. No special equipment is used. Holes are drilled and water and mud are blown out with compressed air, and the asphalt is placed by a pres- sure distributor. This method also is used to level slabs that have sunk one half to one inch. Mud-jacking is em- ployed for greater settlement.

Badly broken areas are replaced with concrete, bad subgrade also being re- placed where necessary. In some in- stances, badly cracked old pavements are broken up with a drop-hammer and are pounded into the subgrade to stabil- ize it.

If resurfacing is to be undertaken soon, macadam type patches or bitu- minous patches are used. Where widen- ing is to be included, that work and the patching are undertaken when pos- sible at least a year before resurfacing. Weak places then show up and can be corrected at the time of resurfacing.

Three types of resurfacing

Three types of resurfacing are used in Ohio. Bituminous seals are applied to scaled pavements where scaling has not progressed to the point of making an extremely rough surface. This treat- ment is successful only when good sound aggregates for cover are avail- able. It may last from four to seven years. Where scaling is deep and yet the pavement is sound, a road-mix sur- facing is applied unless traffic is very heavy. It varies in thickness from ¾ in. to 1½ in. and costs 20 to 50¢ per sq. yd. However, unless this surfacing is properly proportioned it will bleed in wheel tracks and may shove.

Where the pavement has been weak- ened to the point of needing strength- ening, a plant-mix surfacing stable enough to resist displacement under concentrated wheel loads is used. Patch- ing is carefully done and badly settled spots are mud-jacked. Low spots are corrected with compacted bituminous patches. If there are many of these low spots, patching is included in the resurfacing contract.

Plant-mix bituminous surfacing has the advantage of being placed under traffic, requiring only a short one-way length of road to be closed at one time. Paving machines have been found to produce remarkably smooth surfaces on very rough pavements due to their automatic leveling devices.

Present practice in Ohio is to make this type 2½ in. or more in thickness, sometimes going to 5 in., and placing it in three courses. Costs vary from 60¢ to $1.25 per sq.yd. During 1944, one million tons was placed at an aver- age cost of 80¢.

In discussion of this paper, C. M. Hathaway of Illinois said Illinois fol-

(*Continued on page* 16)

Officers of the Moles, New York construction men's organization, for the next year. Left to right: RALPH ATWATER, of Shultz Dred ing Co., treasurer; W. W. HANLY of Wood Preserving Division, Koppers Co. secretary; AL WARWICK of Eugene F. Warwick In first vice president; ARTHUR A. JOHNSON of the Arthur A. Johnson Corp., president and CHAS. B. SPENCER, of Spencer, White Prentis, Inc., second vice president.

MEN AT WORK

ROBERT BAYARD, left, of Johnson, Dr & Piper and CARLTON PROCTOR Moran, Proctor, Freeman & Mueser, both whom have had considerable foreign w during the war period, relax for a few minu at the Moles annual meeting in New Yo

FRED R. WHITE has served 25 years chief engineer of the Iowa State Highw Commission. Mr. White succeeded Thom H. MacDonald, chief of the Federal Publ Roads Administration in that position Nov. 14, 1919, the year the Iowa prim road system was established.

H. C. WHITEHURST, director of highways for the District of Columbia, is spending the major portion of his time perfecting plans to bring highways in the nation's capital up to date.

Big Stack Shot Down with Dynamite

n interesting, if not new, method d to demolish a tall stack at the issippi Glass Co. plant, Fullerton, L, was described recently in *The loite Engineer.*

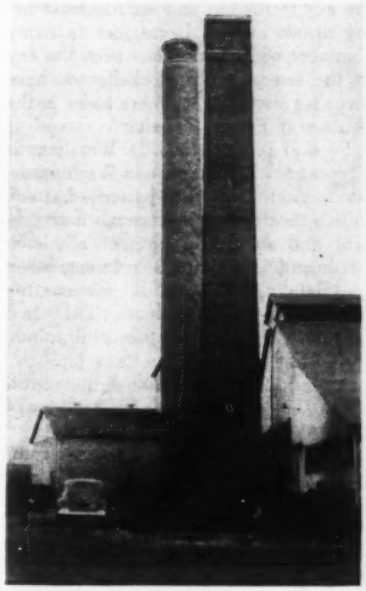
he stack was of brick construction, ft. high, 8 ft. in diameter at the m, and with walls 12 in. thick. re was an inner lining with an ide diameter less than the inside meter of the outer stack so that re was an air space between them. space in which the stack could was limited to less than one drant of a circle to prevent its ing upon adjacent buildings. Ac-lly, however, it was brought down a space much more limited in area. The first operation consisted of re-ving brick from the base of the ck in the shape of a wedge, an open-about 4 ft. high and approximately ft. wide. Into this hole a proper size ber was wedged into place. The hole s then made larger until another ber could be placed. Four such bers were inserted in this manner til they formed a wedge large enough support the weight of the stack.

The problem then was to remove all timbers simultaneously so that the ck could fall as planned. Two cart-ges of 40 percent extra gelatin were placed into each of the timbers. Also two similar cartridges were loaded into two holes in the brick to blast out the narrowed area of the wedge.

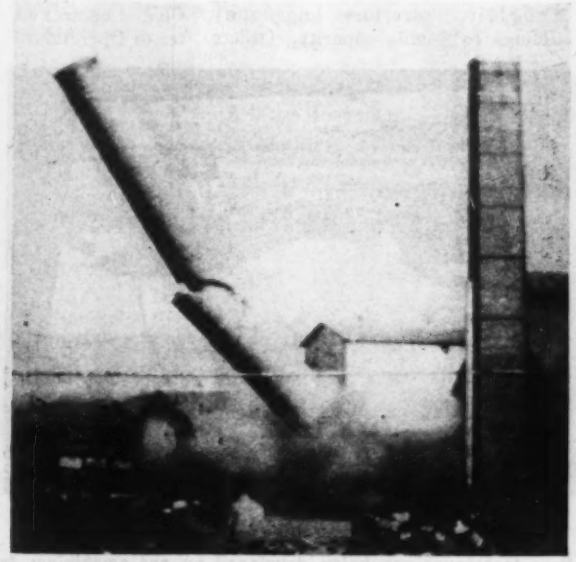
Several holes then were drilled into the timbers but it was finally decided to load only two of them in each timber. One of these was drilled 7 in. deep and about 18 in. from the upper end of the timber. The second hole was drilled in the same manner at right angles to the first hole, and about 4 in. below it. Each hole was loaded with one cartridge of dynamite. The location of these cartridges formed a cross in the timber. All charges were primed with No. 6 electric blasting caps, connected in series, and fired with a 30-hole blasting machine.

Immediately following the blast the stack leaned slowly but remained intact for an instant. It then fractured about half way up as it fell and crashed onto the spot that had been designated.

The Rust Engineering Co., Pittsburgh, Pa., was the demolition contractor. J. L. Donnelly of the company's Los Angeles office was in charge of the work. E. B. Spencer, construction manager, Chimney Division of the Rust Engineering Co., was responsible for the method employed in bringing down the stack.



The 125-ft. high stack at the left was leaning at such an angle as to make it a hazard to safety. Demolition of the stack required that it be dropped within an area limited to less than one quadrant of a circle to prevent damage to adjacent buildings.



icks were removed from the base of the stack to make a hole large enough so that four timbers could be wedged in. o holes were drilled in each timber and loaded with 40 percent extra gelatin. Also two holes were drilled and loaded the brick to blast out the narrow area of the wedge. When the charge was set off the stack toppled forward slowly, mained intact for an instant, then fractured about half way up as it fell.

Construction Communiques

ENGINEERING NEWS FROM THE BATTLEFRONTS

Engineering Construction on Leyte—"Army Engineer construction is now the key to the sea and air blockade being drawn around Leyte just as Army Engineer construction has been the key to the sea and air blockade we have thrown around all Japanese bases in the Southwest Pacific Theater."

So said Brig. Gen. L. D. Worsham at a recent news conference in Washington, and he continued, "The pattern of attack in this theater follows through four general and successive phases: air bombardment, naval bombardment, then the landing of assault forces, followed by construction. The first Engineer mission in the Philippines, for example, was to develop two captured airfields so that fighter cover could be furnished from land-based planes.

"I have seen in New Guinea what this pattern of victory can do. High speed construction jobs—airdromes and their accompanying bulk fuel-handling and storage facilities; ship berths or beach landing facilities; roads, bridges, covered storage, and hospitals—these are the Army Engineer missions which have helped to measure the success of each new advance."

"Can Do" saves $22,143 at Pacific base—When a Pacific naval base was faced with an acute shortage of barracks, authorities ordered conversion of 13 single-story structures into 2-story buildings to double capacity. Orders were to salvage existing stripping, wallboard, and roofing, and reuse as much as possible.

Civilian engineers suggested dismantling the old roof structures piecemeal. They estimated three weeks as the minimum time for each barrack. But when the rush job was assigned to a battalion of Navy Seabees, Lieut. Albert E. Strausser, CEC, USNR, officer in charge of the working party, had a different idea.

Instead of ripping off and tearing apart the roof of each structure, Lieutenant Strausser, who, before he entered the service, was president of the Capitol Construction Co., of Berwick, Pa., had the Seabees break loose each roof in one section and jack it up on blocking. An additional story was built underneath the raised roof and above the first floor. Not a single piece of lumber of the old roofing was lost.

Resultant savings to the Navy from this method as compared with the more conventional method were estimated at $22,143 on the thirteen barracks. Time was cut from one barrack every three weeks to two barracks per week.

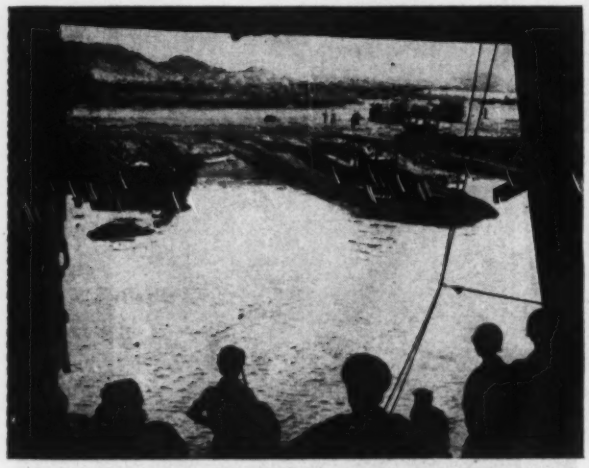
"Red Ball Highway"—Road maintenance of the Red Ball Highway, the network over which supplies are rushed from the beaches to the various fronts, requires the services of 6,000 soldiers, according to Maj. Gen. C. R. Moore, Chief Engineer of the European Theater of Operations.

All the gas and lubricants used [by] the American Expeditionary Force[s] the First World War would now be [con]sidered just a fair operational reserve for the Army and Air Force, according to General Moore.

Tractor Drivers Honored — From France comes this story of D-Day gallantry by two bulldozer operators that brought them each the coveted Distinguished Service Cross.

The soldiers, Privates William Shoemaker and Vinton W. Dove, [were] of an engineer combat battalion, working in shifts with their bulldozer while it was a specific target for intense mortar and cannon fire, dragged [over]sized wheeled and track-propelled vehicles out of the surf. Then, with the battle raging furiously about them, they set out in their unprotected machines to clear obstructions from the beach exits. This dangerous objective accomplished, they smashed road blocks and filled in gaping anti-tank traps while geysers of earth from bursting shells rained down on their tractor, a "Caterpillar" D-8 equipped with a bulldozer. In the words of the official citations, "Their courageous actions permitted vehicles and armor to move out in support of the infantry."

Privates Shoemaker and Dove received the second highest decoration awarded by the Army from Lieut. Gen. John C. H. Lee, Commanding General, Communications Zone, ETO, while the entire brigade, standing at attention, looked on. Before entering the Army, Pvt. Shoemaker was employed by the Harrison Construction Co., Pittsburgh, Pa., and Pvt. Dove was a construction foreman for the C.M.&H. Construction Co., Washington, D. C.



Bulldozers come first on two distinct battlefronts

New techniques are being developed by our amphibious forces. On Leyte Island, bulldozers loaded with the earlier forces are being used to build jetties out into the water so that the LSTs' bringing in additional troops and supplies can put them down on dry land instead of in shallow water. Right: Privates Vinton D. Dove and William J. Shoemaker with their bulldozer, a combination whose activities in the beach landings in Normandy on D-day won for them the Army's Distinguished Service Cross for heroism under fire.

Government to share right-of-way costs

(*Continued from page* 1)

000,000 a year. For construction, improvement and maintenance of Indian reservation roads, $6,000,000 is provided for each of three years.

There is a special provision that the amount applied to forest roads in Alaska shall be limited to $1,500,000 each year and that such additional amount as otherwise would have been apportioned to Alaska shall be apportioned among those states, including Porto Rico, whose forest highway apportionments for such year otherwise would be less than one percent of the entire apportionment for forest highways for that year.

Fifty-fifty matching

The federal share of the cost of projects built under this act shall not exceed 50 percent, except in the case of right-of-way cost, as previously noted. The $225,000,000 for projects on the federal-aid system shall be apportioned among the states on the old federal-aid formula, one-third area, one-third population and one-third mileage of post roads. The $150,000,000 for projects on secondary and feeder roads shall be apportioned among the states as follows: One-third in the ratio which the area of each state bears to the total area of all the states; one-third in the ratio which the rural population in each state bears to the total rural population of all the states, and one-third in the ratio which the mileage of rural delivery and star routes in each state bears to the total mileage of such highways in all the states; provided that no state shall receive less than one-half of one percent of each year's allotments under the section of the act relating to highways on the federal aid system.

The $125,000,000 per year for projects on highways in urban areas is to be apportioned among the states in the ratio which the population in municipalities and other urban places of 5,000 or more population bears to the total population in like regions in all the states. There is a special provision that Connecticut and Vermont towns shall be considered municipalities regardless of their incorporated status.

Funds for early work

The sum of $100,000,000 may be appropriated to become available to the states immediately upon *apportionment* of the authorization for the first fiscal year for "making of surveys and plans and for construction". Construction is defined in the act as "the supervising, inspecting, actual building, and all expenses incidental to the construction or reconstruction of a highway, including locating, surveying and mapping, cost of right-of-way, and elimination of hazard of railway grade crossings." Under this provision, money will become available immediately in the first fiscal year for surveys and plans and for the purchase of right-of-way, even though the War Production Board does not permit start of actual construction.

First postwar fiscal year

The first postwar fiscal year "shall be that fiscal year which ends on June 30 following the date proclaimed by the President as the termination of the existing war emergency, or following the date specified in a concurrent resolution of the two houses of Congress as to the date of such termination, or following the date on which the Congress by a concurrent resolution of the two houses finds as a fact that the war emergency hereinbefore referred to has been relieved to an extent that will justify proceeding with the highway construction program provided by this act, whichever date is the earliest. The authorization for the first postwar fiscal year shall be apportioned among the states within thirty days from the passage of the act. The authorization for the second postwar fiscal year shall be apportioned among the states within twelve months after the date of such termination or finding as above specified."

As apportionment of funds is to be made within 30 days after passage of the act, the $100,000,000 will become available as soon as appropriated.

Interregional highways

The bill provides that there shall be designated within the continental United States "A National System of Interstate Highways not exceeding 40,000 miles in total extent so located as to connect by routes, as direct as practicable, the principal metropolitan areas, cities and industrial centers to serve the national defense and to connect at suitable border points with routes of continental importance in the dominion of Canada and the Republic of Mexico." The routes of this national system shall be selected by joint action of the state highway department of each state and the adjoining states, as provided in the federal highway act of Nov. 9, 1921, for the selection of the federal-aid system.

All highways or routes included in the national system as finally approved, if not already included in the federal-aid highway system, shall be added to that system without regard to any mileage limitation whatever.

Veteran tunnel builders of New York die

Alf Hjort, chief engineer of the George H. Flinn Corp. for the past 15 years, died Dec. 13 in New York. Born in Norway and educated in Europe, Mr. Hjort came to this country in 1903 and became a naturalized citizen. He spent almost his entire career on tunnel construction in and around New York City. His work included tubes under the East River for the Pennsylvania Railroad, two sections of the Catskill Aqueduct, four tunnels for subway lines under the East River, the Holland vehicular tunnel, Eighth Avenue subway, and most recently the Brooklyn end of the Brooklyn-Battery vehicular tunnel and the Bayonne naval drydock. Mr. Hjort's earlier work was with S. Pearson & Son of London, Degnon Contracting Co. and Pittsburgh Contracting Co. Since 1914 Mr. Hjort had been associated with the Flinn interests.

Ralph M. Burkhalter, for 20 years chief engineer of Poirier & McLane, New York engineers and contractors, died Dec. 14. An engineering graduate of the University of Illinois in 1907, he was one of the early specialists in the compressed air method of tunnel construction. Mr. Burkhalter worked on such projects as the Catskill Aqueduct, Holland tunnel, Triborough Bridge, West Side Highway and East River Drive. He was project manager at the Kandaia Munition Depot at Geneva, N. Y.

. . .

More land required for new Pittsburgh airport

For location of facilities, an additional 400 acres are expected to be added to Pittsburgh's Moon Township airport. The airport proper now comprises 1,129 acres.

To make the additional acres level with the airport, a fill of 3,000,000 cu. yd. of earth will be required, Allegheny County planning engineer, Park H. Martin, has predicted. The work will take six month and is expected to cost about $1,500,000.

Activity on the Postwar Front

Postwar planning by states and municipalities goes on apace, in many cases having been stimulated by the authorization of bond issues at the recent election. Following is a summary of some of the plans in typical communities:

Los Angeles, Calif.—A program of betterments and extensions for the Los Angeles Department of Water and Power to cost $124,344,500 recently was pronounced ready to launch when fighting in Europe ends. Submitted by General Manager Samuel B. Morris, the tentative program included an engineering progress report indicating that $51,309,000 of projects can be started within one to twelve months after final approval and completed within four years.

Covering a period of seven to eight years, the program includes jobs postponed because of wartime shortages, it was reported. Total cost of power system projects is estimated at $101,000,000, while water system improvements are estimated at $23,344,500. Each of the projects is subject to approval by the Board of Water and Power Commissioners as labor and materials become available.

Youngstown, Ohio—The Youngstown Chamber of Commerce postwar research committee, comprising mainly public officials representing all local governments and agencies, will act as coordinator of postwar proposals so that improvement projects of every subdivision fit into an overall pattern, eliminating conflicting plans, announced H. Ross Packard, Chamber executive secretary. He reported that the city, Mahoning County, and city public schools are ready to begin preparation of actual engineering plans but are awaiting federal or state aid. The Youngstown Metropolitan Housing Authority will have tentative plans ready early next year. The county-wide program is expected to cost about $10,000,000, including about $7,000,000 for the city whose principal postwar job will be the construction of a sewage treatment plant and revamping the sewer system, to cost about $2,500,000. The state highway department is working on a master Mahoning County highway which will include bypass routes for trucking and freeways for heavy commuter traffic.

Everett, Mass.—This city has a postwar rehabilitation fund of $406,732, to be increased by at least $100,000 on hand for postwar spending. Plans include completing a nurses' home, an addition to the city hospital and a new city hall. The city does not intend to issue bonds nor ask federal aid to finance construction.

San Diego, Calif.—San Diego has $6,033,000 on hand in cash and investments for postwar construction, with present plans calling for sewers, a library, water extensions and harbor developments.

Oregon—More than $20,000,000 will be ready for postwar public works in 69 Oregon cities, a survey by the University of Oregon shows.

Of the state's 16 cities with more than 5,000 population, 13 submitted detailed information on financial plans for postwar projects, as did 12 of the 18 cities of 2,500 to 5,000 population and 15 of the 32 towns of between 1,000 and 2,500 population. Replies from cities of less than 10,000 population indicate these communities have concentrated mostly on reducing debts.

Portland issued bonds authorized by the voters for $12,000,000 to construct a sewage disposal plant and $3,000,000 for dock improvements. Other cities of more than 5,000 are relying on special levies and bond issues to a greater extent than smaller cities. Depreciation reserves and reserves set up from budget surpluses also will provide cash for postwar expenditures. Except in a few instances, reserves available in smaller cities were built up from surplus funds resulting from shortages of manpower and materials during the war period.

Voters approved every bond issue, special tax levy and charter amendment authorizing financing of postwar work. Eugene was authorized to issue $85,000 in bonds for construction of a sewage disposal system and Salem to issue $200,000 in bonds for the same purpose.

Camden, N. J.—Camden plans the construction of a sewage disposal plant as its No. 1 postwar project; cost will range from $6,000,000 to $10,000,000 and may be financed as a utility.

Hartford, Conn.—Hartford has set aside about $750,000 for postwar uses, and in addition has $80,000 specifically earmarked for a new fire station; the city does not anticipate a bond issue prior to the end of the war, and will not rely on federal grants to construct other improvements.

Houston, Tex.—Houston has a 5-year plan involving expenditure of $31,000,000 which, city officials say, will not increase the city's taxes; part of the money would come from issuance of revenue bonds, including an issue of $14,000,000 awarded Oct. 26, the balance to consist of bonds issued as older bonds are retired.

Illinois—The Citizens Construction Council of Illinois has been granted a charter by Secretary of State Richard Rowe Yates. The incorporators are John Sankey, E. P. Schmidt and M. P. Flickinger, all of Springfield. The purpose is to prepare postwar plans for employment during the period of adjustment following the war by the creation and development of public and private construction of business, industrial and cultural projects throughout the state of Illinois.

Florida—The postwar planning division of the Florida State Chamber of Commerce, in its report submitted by Chairman G. G. Ware at the body's recent annual convention stressed activities under three general headings—study and support of specific state and national programs, encouragement of planning by industrial and business firms, and assistance and encouragement of local development agencies.

St. Louis, Mo.—The Board of Estimate and Apportionment has approved a proposed city ordinance that would appropriate $500,000 in waterworks revenue to be used for engineering and architectural services in connection with the $19,000,000 postwar improvement program for the St. Louis Water Department. This includes modernization of the Chain of Rocks plant on the Mississippi River at an estimated cost of $13,500,000. A $7,500,000 bond issue for this project was voted last August, and $11,500,000 of other funds are available. Thomas J. Skinker, director of the Department of Public Utilities and E. E. Easterday, water commissioner, will have general supervision over the improvement program when it gets under way.

New Orleans—Municipal authorities have outlined a proposed postwar public improvements program amounting to $131,242,822, which includes a wide variety of projects; $38,488,460 has been allocated for housing, $33,000,000 for roads and streets; $18,776,560 for sewer, water and sanitary facilities; and $12,979,060 for schools and other establishments.

Other projects include: Bridges and viaducts, airport facilities, public buildings and parks.

News of the Engineering Schools

Elected president of Rensselaer Polytechnic Institute, Troy, N. Y., the country's oldest college of engineering and science (established 1824), Livingston W. Houston succeeds Dr. William Otis Hotchkiss, who retired a year ago last October. Mr. Houston has been a trustee of RPI since 1926 and has been associated with its active administration for the last 13 years, first, as secretary of the board in 1931, then, as secretary and treasurer since 1935. As executive vice-president and acting president for most of the war period, he has directed the many war research and war training activities that have been under way on the campus.

He was formerly president of the Ludlow Valve Manufacturing Co., one of Troy's oldest industries, and is now a director and chairman of its board. He is a member of the boards of two committees of the National Association of Manufacturers in connection with finances; a member of the Engineers Club in New York City; and a member of the boards of the Manufacturers National Bank, Troy Savings Bank, Troy Public Library, Samaritan Hospital in Troy, and the United Traction Co. of Albany.

Born in Wyoming, Ohio, in 1891, and later a resident of Evanston, Ill., Mr. Houston was graduated at RPI as a mechanical engineer in 1913. He was a sergeant major on the Mexican border in 1916 and a captain in World War I.

John Harold Lampe, dean of engineering at the University of Connecticut since 1940, has been appointed dean of engineering at North Carolina State College, Raleigh, N. C. He will assume his new duties in the spring.

Hunter Rouse, professor of fluid mechanics at the University of Iowa, has been appointed director of the Iowa Institute of Hydraulic Research, according to Francis M. Dawson, dean of the college of engineering, whom he replaces in the directorship.

The department of civil engineering in cooperation with the extension department of the University of Alberta, Edmonton, Alta., is sponsoring a refresher course dealing with the application of soil mechanics to the construction of airports, highways and earth dams, and also with the inspection and control of concrete on similar work. The school will be held Jan. 15-19.

Plans are under way for the accrediting of the curricula of technical institutes by the Engineers' Council for Professional Development, according to an announcement by H. P. Hammond, dean of the school of engineering, Pennsylvania State College and chairman of a subcommittee on technical institute programs of E.C.P.D.

"The general purpose of the accrediting program," Dean Hammond said, "is to raise the standards of instruction in the field of technical education intermediate between the engineering college on the one hand and secondary and vocational schools on the other. It is expected by this means to enhance the general status of technical and engineering education as a whole."

The committee in charge of this work consists of: C. W. Beese, Purdue University; George W. Case, the U. S. Office of Education; John T. Faig, the Ohio Mechanics Institute; L. J. Fletcher, Caterpillar Tractor Co.; E. H. Rietzke, National Council of Technical Schools; and B. M. Woods, University of California.

A basis for accrediting technical institute curricula has been adopted. It includes the length of curricula, requirements for admission, number of the teaching staff, the type, financial ability, and achievements of the institution in which the curricula are offered, and the adequacy of physical facilities.

• • •

Syracuse gets priorities for water extensions

Priorities have been granted to the city of Syracuse, N. Y., by federal authorities for construction of a third water conduit from Skaneateles Lake, and also for construction of water lines to a new industrial plant north of the city. The conduit will cost $250,000; the new pipeline, $100,000. Both amounts are to be taken from the city water department's surplus account.

Bids are to be sought at once for purchase of 4,400 ft. of 54-in. steel pipe which will provide an inlet from the lake to Willow Glen where it will join with the present 15-mile conduit. This addition to the third conduit, which will not complete it, will nevertheless give the city a margin of safety in the supply of water. Present capacity of the system is 46½ mgd.; the peak load reached was 45 mgd. last summer. The addition, to be built in the spring, will enable the city to pump 50 mgd.

Approval of the state Water Power and Control Board is expected to follow that of WPB for construction of the water line to the new industry. When this permission is given the water department will be ready to proceed with construction of the 16 and 20-in. lines.

Work being resumed on Jackson Gulch Dam

Construction of Jackson Gulch Dam in southwestern Colorado, near the town of Mancos has been resumed as an irrigation project to speed war food production. Originally approved for construction in October, 1940, this Bureau of Reclamation project was shut down for several months in 1942 and 1943 because of lack of priorities.

Planned to aid in the irrigation of 10,000 acres, the earthfill dam is being built to control the flow of a tributary of the San Juan River. It will have a maximum height of 130 ft., and a crest length of 1,930 ft.

Construction of the concrete cutoff wall for the dam is shown above. The work is being done by force account, A. W. Brainbridge acting as resident engineer for the Bureau of Reclamation, for which S. O. Harper is chief engineer.

State officials discuss limited access roads

(Continued from page 9)

lows very similar procedures, but they put down their plant mix in two layers of around 3 in. total thickness.

Specifications for ready-mix

Early adoption of an up-to-date specification covering the manufacture and use of ready-mixed concrete was urged by E. C. Lawton, chairman of the association's committee on road construction. In view of the rapidly increasing use of this product in highway construction, particularly in and around urban areas, C. M. Hathaway, chairman of the sub-committee on portland-cement concrete pavements recommended a thorough revision of current specifications to include the latest developments in the field of ready-mix concrete. Such a revision has been drafted and will be circularized among the 40 members of the committee, said Mr. Hathaway, with the expectation that all differences of opinion on this controversial subject can be ironed out and the new specifications adopted at next year's annual meeting of the association.

In a round-table discussion of construction specifications, E. L. Roettiger, state highway engineer, Wisconsin, declared that the committee's activities should be concentrated on specific items of construction in current use by a majority of the states rather than attempting to cover the entire field. J. J. Corbett, construction engineer of the Missouri State Highway Department, urged an up-to-date revision and the adoption of specifications covering nationally recognized construction procedures, despite the fact that each state will undoubtedly have certain specific problems of a local nature.

Increased cognizance must be taken of new types of highway equipment in the drafting of construction specifications, asserted N. S. Anderson, district engineer of the PRA at Spartansburg, S. C. He also advocated limiting the number of specific topics to be considered by the association's committee on construction specifications.

Combine traffic and planning studies

Traffic engineering and highway planning should be combined under one departmental head and administered at equal levels for maximum operational efficiency, said J. Carl McMonagle, director of planning and traffic, Michigan State Highway Department. As proved by past experience in Michigan, the separate administration of these two essential factors in highway construction and administration contained a number of faults.

Primarily there was very little exchange of data, experience or information between the one agency dealing with traffic counts and behavior of traffic as it affects planning of proposed construction, and the other which dealt with traffic control on existing highways in the interest of safety and operational efficiency, said Mr. McMonagle.

Other faults of this old system included a lack of cooperation among engineers and personnel of the two divisions even when engaged on related problems. Furthermore, said Mr. McMonagle, planning and traffic forces often performed the same tasks, sometimes simultaneously in the same location, one not knowing what the other was doing.

Personnel studies

A preliminary report to the Highway Research Board on personnel problems of the highway maintenance departments was presented by Rex M. Whitton of Missouri. When completed, this report will summarize the practices of the states with respect to civil service, disability, sick leaves and vacations, and rates of pay.

Following Mr. Whitton's report, Mr. Motl of Minnesota outlined the manner in which Minnesota is handling its personnel, stating that in his opinion proper handling of personnel should have first place on the schedule for the years ahead if highway departments are to retain good men. Minnesota pays its regular maintenance employees on an annual basis, "banking" overtime accumulated in summer months and paying it to the employees in slack times in the winter.

Attracting new men

In a discussion of questions involved in providing jobs for men returning from the military services and in attracting able young men into highway work, W. H. Root, maintenance engineer of the Iowa State Highway Commission, said that a poll of a number of leading engineering educators revealed the almost unanimous opinion that highway departments are not offering the things that are required to get such men, namely, a salary equivalent to the normal salary in industry, continuity of employment, prospects for advancement, reward for special ability, and freedom from politics.

Mr. Root said he does not consider the situation at all hopeless, if the highway departments will realize that the problems of the 1945-1955 decade cannot be solved with "Model T methods". We are entering, he said, a period of tremendous activity in highway construction that should present real opportunities for young engineers.

JOBS OF THE WEEK

SEWERS AT AIRPORT, Idlewild, N. Y.

Department Marine & Aviation, New York, N. Y., received the lowest bid for sewers from Andrew Catapano, Laurelton, N. Y., at $1,140,824. Contract 2421 from Nicholas Di Menna Co., New York, N. Y., $882,000. Jay Downer, New York, is consulting engineer. All work is at the municipal Airport, Idlewild.

HOSPITAL, Philadelphia, Pa.

Hughes-Foulhord Co., Philadelphia, Pa., has been awarded a contract for constructing convalescent ward, clinic, mess hall, and connecting corridors at Naval Hospital, by the Bureau of Yards & Docks, Navy Department, Washington, D. C., at $993,500.

HOSPITAL, Long Beach, Calif.

Bureau of Yards & Docks, Navy Department, Washington, D. C., awarded a contract for Naval Hospital expansion to R. E. Campbell, Los Angeles at $1,357,400.

ROADS, Havana, Cuba

Republic of Cuba, Havana, will construct by day-labor roads connecting Baracoa to Holguin and Baquano Cue to Mayari, to open up Baracoa to traffic. Also series of roads linking Trinidad to Sancti Spiritus and Jibaro. The estimated cost is $4,000,000. National Development Commission, Havana, is the engineer.

HOUSING, Oceanside, Calif.

Public Housing Authority, San Diego, Calif., awarded a contract for dwelling units to Shumaker & Evans, Los Angeles at $1,118,612. Risley, Gould & Reichart, Los Angeles, Calif. are the architects.

Note—Additional bidding and contract news on many projects large and small appear in the Construction News section beginning on page 18.

OBITUARY

Charles B. Park, 77, instructor in engineering at North Carolina State College, Raleigh, from 1891 to 1933 when he retired, died Dec. 6. He was chairman of the first planning commission of Raleigh.

Henry Wallace Truesdall, 66, civil engineer with the Los Angeles, Calif., engineering department for 20 years, died Dec. 3.

George E. Bechtel, 61, vice-president of Trundle Engineering Co., Cleveland, Ohio, died Dec. 4. He had served midwestern firms in management engineering activities.

Charles E. Felton, 69, of Ossining, N. Y., a civil engineer who had been associated with the New York Central Lines since 1921 and lately had been in charge of improvements of the road's property on the west side of New York City, died Dec. 11.

Charles L. Lindsay, 69, who for more than 20 years was an engineer with the Kansas State Highway Department, died recently.

Col. Joseph W. Cox, Jr., who commanded the 339th Engineers at Camp Butner, N. C., prior to going overseas in April, 1943, died recently of wounds received in the Philippines.

John R. S. Scott, 65, civil engineer of Stanstead, Que., died Dec. 11.

R. P. Harris, 69, retired levee contractor of Lake Comorant, Miss., died Dec. 7. He was a native of St. Louis and started levee construction in 1895. He was a charter member of the Associated General Contractors of America.

Col. E. W. Buell, retired U. S. Army engineer, who supervised the building of Ohio River dams from Ashland, Ky., to Fernbank, below Cincinnati, died Dec. 7 at Lake Worth, Fla.

L. H. McAfee, 74, formerly president of the L. H. McAfee Co., Fort Wayne, Ind., excavating firm, died Dec. 6. His firm did the excavating for many of Fort Wayne's large buildings. He was in business for 52 years.

Neil P. Harrison, 75, contractor of Tacoma, Wash., and owner of the Harrison Bros. Construction Co., died Dec. 6. A native of Wisconsin, Mr. Harrison founded the firm in 1905 with his brother, E. W. Harrison.

Knute W. Granlund, 75, a retired city surveyor of Philadelphia, died recently. Mr. Granlund was a native of Sweden where he obtained his civil engineering degree. He retired from the city service in 1933 after 45 years.

Comdr. Robert S. Hedtler, U.S.N., 65, former consulting engineer for Philadelphia, Pa., died Dec. 7 in Washington, D. C. Commander Hedtler, a nationally known specialist in airport development, supervised the planning and development of the Philadelphia Municipal Airport. He was Director of Aeronautics of Temple University, Philadelphia.

Charles H. Everitt, 71, a leading building contractor of Buffalo, N. Y. for 45 years died Dec. 13.

William C. Coffin, 82, chairman of the board of trustees of the University of Miami, Fla., for the last nine years, died Dec. 4. An architect and engineer before his retirement in 1927, he designed and built blast furnaces, steel mills and oil refineries in the United States, Canada and other countries.

Thomas H. Wall, 49, engineer, who had been with the Bureau of Reclamation since 1915, died recently at Grand Coulee Dam. Mr. Wall had been with the Columbia basin project since April, 1935.

Henry W. Hayes, 77, formerly chief engineer of the Fitchburg Railroad, and later of the Massachusetts public utilities commission, died recently at Hollis, N. H.

Ernest E. Beauvais, 58, vice president of Edward E. Gillen Co., marine contractors, died Dec. 1, 1944, in Milwaukee, Wis. He had been associated with the Gillen Co. since 1923.

Edwin J. Poirot, 66, head of the Poirot Construction Co., Chicago, died in that city Dec. 4.

Joseph E. Bell, 62, a civil engineer with the Montana Power Co. during the last 30 years, died Dec. 7 in Butte.

WEEKLY CONSTRUCTION SUMMARY

CONTRACTS

Continental U. S. Only (Thousands of Dollars)

	Week Ending Dec. 23 1943	Dec. 14 1944	Dec. 21 1944
Federal	$28,073	$25,962	$6,671
State & Municipal	2,185	1,841	7,377
Total public	$30,258	$27,803	$14,048
Total private	4,397	3,954	6,177
TOTAL	$34,655	$31,757	$20,225
Cumulative 1944	(51 weeks)		$1,706,603
1943	(51 weeks)		$3,033,664

Note: Minimum size projects included are: Waterworks and waterways projects, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

NEW PRODUCTIVE CAPITAL

	Cumulative 1943 51 weeks	1944 51 weeks
NON-FEDERAL	$319,044	$433,303
Corp. Securities	22,431	110,419
State & Mun.	130,435	177,944
RFC Loans	15,045	61,940
FPHA Loans	3,133	.....
REA Loans	20,000	20,000
Fed.-Aid Hwy.	128,000	63,000
FEDERAL	$2,753,838	$1,263,800
TOTAL CAPITAL	$3,072,882	$1,697,103

ENR INDEX NUMBERS

Index base=100		1913	1926
Construction Cost	Dec. '44	302.30	145.32
Building Cost	Dec. '44	236.51	127.85
Volume	Nov. '44	74	33

MEETINGS

National

CANADIAN CONSTRUCTION ASSOCIATION, annual meeting, Chateau Frontenac, Quebec, Canada, Jan. 15-17.

AMERICAN ROAD BUILDERS' ASSOCIATION, 42nd annual meeting, Stevens Hotel, Chicago, Ill., Jan. 16-19.

AMERICAN SOCIETY OF CIVIL ENGINEERS, annual meeting, Hotel Commodore, New York City, Jan. 17-19.

Regional and Local

ASSOCIATED GENERAL CONTRACTORS OF MINNESOTA, 26th annual meeting St. Paul Hotel, St. Paul, Minn., Jan. 11-13.

LOUISIANA ENGINEERING SOCIETY, annual meeting, St. Charles Hotel, New Orleans, La., Jan. 11-13.

OKLAHOMA SOCIETY OF PROFESSIONAL ENGINEERS, annual state meeting, Huckins Hotel, Oklahoma City, Okla., Jan. 12-13.

NEW YORK SECTION, AMERICAN WATER WORKS ASSOCIATION, midwinter luncheon meeting, Pennsylvania Hotel, New York, N. Y., Jan. 17.

PHILADELPHIA DISTRICT, AMERICAN SOCIETY FOR TESTING MATERIALS, symposium on magnetic particle testing, Hotel Benjamin Franklin, Philadelphia, Pa., Jan. 22.

NEW YORK STATE COUNTY HIGHWAY SUPERINTENDENTS ASSOCIATION, annual meeting, Albany, N. Y., Jan. 24-26.

NORTH CAROLINA SOCIETY OF ENGINEERS, winter meeting, Hotel Sir Walter, Raleigh, N. C., Jan. 26-27.

WISCONSIN COUNTY HIGHWAY COMMISSIONERS' ASSOCIATION, annual winter highway conference, Schroeder Hotel, Milwaukee, Wis., Jan. 30-Feb. 1.

CONSTRUCTION REPORTS

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 18, N. Y.

ELSIE EAVES, Manager — *SCOTT McLEOD, Statistics* — *J. A. MAHONEY, Reports*

(Daily service also available—Write for details)

WATER SUPPLY

PROPOSED WORK

D. C., Wash—District Comrs., District Bldg., new deep well, water treatment and exten. water supply line, and imprv., exten. water sys. $26,000.

Mass., Palmer — Town, Bd. Selectmen, Town Hall, preparing plans pump. sta. for water sys. Whitman & Howard, 89 Broad St., Boston, engrs. CD 11/28—ENR 11/30.

Ore., Medford—City, City Hall, 10 m.g. reservoir. $250,000. Cunningham & Associates, Spalding Bldg., Portland, engrs.

†Virginia—U. S. Eng., 1 and Douglas Sts. N.W., Wash., 25, D. C., revising specifications Contr. B, waterline, Arlington Co.

Wash., Seattle—City, County-City Bldg., Zone 4, water pipe line in Military Rd. from S. 112 to S. 135 Sts. $50,000. C. L. Wartelle, County-City Bldg., city engr.

Puerto Rico—Insular Interior Dpt., San Juan, constructing deep well, pump. plant, storage tank, distr. sys., fire hydrants, public faucets, Florida, Barceloneta, $28,000; installing pump. plant to pump water from Yaguez River to overcome present shortage in Mayaguez water supply sys., $29,000.

BIDS ASKED

Bids Asked December 27

†La., New Orleans—Federal Works Agency, J. W. Bradner, Jr., dir., Electric Bldg., Fort Worth 2, Tex., at Room 104, 526 Carondelet St., New Orleans, installing watermains, Contr. 1, La. 16-265F, for Pub. Housing Auth., NHA, 1205 Electric Bldg., 7 and Taylor Sts., Fort Worth 2, Tex. $81,545. Extended date. Plans deposit $15. Godat & Heft, 314 Terminal Bldg., engrs. CD 12/1—ENR 11/23.

Bids Asked January 3

Tex., Irving—City, E. J. Johnson, mayor, drilling, casing deep well and furnishing, setting deep well pump. equip. Plans deposit $10. Koch & Fowler, 701 Great Natl. Life Bldg., Dallas, engrs.

Bids Asked January 4

†Utah, Helper—City, E. Flaim, city recdr., 2 m.g. rein.-con. covered reservoir, Utah 42-187-N. $52,000. **FWA.** Extended date. C. J. Ullrich, 422 Ness Bldg., Salt Lake City, engr. CD 10/25—ENR 11/2.

Bids Asked January 5

La., Baton Rouge—C. L. Barrow, supt. East Baton Rouge Parish School Bd., Court House Bldg., deep well water supply for Central High School, Sullivan and Canal Rds., East Baton Rouge Parish. T. A. Lucy, 142 East Dr., engr.

†Tex., Waco—G. J. Rohan, water supt., City Hall, Contr. 2, 20,000 ft. 12 and 20 in. mains, installing 4 pump units, with connecting piping. $50,000. **FWA.** Plans deposit $15. J. J. Rady, Insurance Bldg., Fort Worth, engr. CD 11/30—ENR 12/7.

Bids Asked January 12

†Tex., Waco—G. J. Rohan, water supt., City Hall, Contr. 3, water imprvs. **FWA.** Plans deposit $15. J. J. Rady, Insurance Bldg., Fort Worth, engr. CD 11/30—ENR 12/7.

LOW BIDDERS

Ind., Veedersburg—Town Bd., D. Banta, clk., City Hall, Dec. 6, WW addns., exten., from Fischel Co., 2367 Canterbury Ave., Cleveland, O., **$148,000**; water tank, from W. E. Caldwell Co., Ormsby Ave., Louisville, Ky., **$25,000.** CD 11/27—ENR 11/30.

S. C., Winnsboro—City, Bd. P. Wks., Dec. 14, exten., imprv. water filtration plant, from C. Y. Thomason Co., Greenwood, **$52,286.** CD 12/5—ENR 12/7.

★**Tex., Wichita Falls**—City, W. B. Hamilton, mayor, Dec. 13, water supply imprv., incl. 2.5 mi. graveled hy. with drainage structures, earthen dam, appurtenant structures, Contr. 1, from H. N. Rodgers & Son Co., 62 S. Front St., Memphis, Tenn., **$674,433**; water supply imprvs. incl. clearing approx. 5,000 acres and approx. 35 mi. fencing, Contr. 2, from United Contg. Co., Wichita Falls, **$86,898.** CD 11/16—ENR 11/23.

CONTRACTS AWARDED

†Fla., Key West—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C., replacement underwater crossing in Key West Water Line, N.O.B., NOY 11053, to Charley Toppino & Sons, 725 Caroline St., **$97,972.**

Tex., Colorado City—J. A. Sadler, mayor, City Hall, water and sewer extens., incl. pump. station, to D. V. King, Colorado City, **$85,000**, cost plus basis. Freeze & Nichols, Capps Bldg., Fort Worth, engr. CD 11/27—ENR 11/30.

†Tex., Fort Worth—S. H. Bothwell, city mgr., City Hall, Contr. 3, removing water pumps at Holly Plant, Tex. 41-641-N, to Fort Worth House Moving Co., 2015 West Berry St., **$15,160.** Est. $20,000. **FWA.** Awarded 12/9. CD 11/20.

Tex., Port Arthur—City, B. N. Taylor, mgr., City Hall, Foley pump. station bldg., etc., to O. W. Collins, Port Arthur, **$66,900.** Chas. L. Wignall, Port Arthur, archt. J. B. Converse, Port Arthur, engr.

Tex., San Antonio—City Water Bd., 106 W. Market St., laying over 20,000 lin. ft. 2- to 6-in. c.i. mains, connections, Davis Heights location, force account. **$25,000.** CD 12/11—ENR 12/14.

Wis., Marinette—Marinette Water Works, Marinette, fabricating, erecting 400,000 gal. elevated tank, to Pittsburgh-Des Moines Steel Co., 38 South Dearborn St., Chicago, Ill., **$31,600.** Bids 10/26. CD 10/17—ENR 10/19.

Symbols and Abbreviations Include:

† Federal Government
★ Project of $500,000 or over
ENR Engineering News-Record
CD Engineering New-Record Construction Daily

Projects—By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger; water supply, earthwork, waterworks, $15,000; other public works, $25,000; industrial buildings, $40,000; other buildings, $150,000.

Classes of Construction

(Name in order of Listing)

Water Supply; Sewers, Waste Disposal; Bridges; Streets & Roads; Earthwork, Waterways; Latin America; Public Buildings; Commercial Buildings; Industrial Buildings; Unclassified

Stages Reported

PROPOSED: (except Streets & Roads): BIDS ASKED (new announcements only. For full calendar, see also preceding issues of ENR);

LOW BIDDERS: On jobs below $500,000 value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: Except awards to low bidders previously reported in low bidder stage.

Dates shown are of issue in which last previous report was published.

SEWERS, WASTE DISPOSAL

PROPOSED WORK

Ark., West Memphis—M. Dacus, mayor, City Hall, replacing 2 pump. stations with pump. stations, and extend line. $173,0[illegible] M. L. Crist & Associates, Union Life Bldg., Little Rock, engrs.

†Calif., Hueneme—Federal Works Agency, 1206 Santee St., Los Angeles, revising plans vitr. clay sanitary sewers and sewage treatment plant, Calif., 4-660-F. Over $200,000 Bids 11/24 rejected. S. G. Bennett, 1[illegible] Say Rd., Santa Paula, engr. CD 11/25—ENR 11/30, under LB.

Ore., Tillamook—City, City Hall, sewage treatment plant, interceptor sewers. $55,0[illegible] Applied to FWA. U. E. Nelson, Railway Exchange Bldg., Portland, engr. CD 9/27—ENR 10/5.

Puerto Rico—Insular Interior Dpt., San Juan, sanitary sewerage sys., west of Concepcion Street, San German. $55,000.

Ont., Hamilton—City, combined storm and sanitary sewers. $120,000. W. L. Maxwell, City Hall, engr.

Ont., Merrickville—Municipality, J. Jakeway, reeve, sewage disposal sys. $50,000.

Ont., Oakville—Municipality, C. H. Byers, clk., sewage disposal plant. $85,000. E. G. Darling, 36 S. James St., Hamilton, engr. CD 6/12—ENR 6/22.

BIDS ASKED

Bids Asked December 26

N. Y., New York—President Bronx Borough Bronx County Bldg., 851 Grand Concourse, Zone 51, sewer, appurtenances, Robinson, Schurz Ave., Hosmer and Harding Aves., sewer, appurtenances in unnamed street between Baychester and Edson Aves., and Edson Ave. between unnamed street and Boston Rd.; repairing storm damages to sewer and appurtenances Kingsland Ave.

Bids Asked January 2

N. C., Washington—City, R. P. Mackie, Kenzie, mayor, sewage pump. plant, installing equip., Sect. 1; two 700 g.p.m. horizontal non-clog sewage pumps, Sect. 2. W. F. Freeman, High Point, engr.

Bids Asked January 9

†Tex., Texas City—E. A. Johnson, mayor, City Hall, sanitary sewer imprvs., grit chamber and sewage lift station, Tex. 41-696-N. $105,000. **FWA.** Plans deposit $25. J. J. Rady, Insurance Bldg., Fort Worth, engr. CD 10/5—ENR 10/12.

Bids Asked January 15

Ala., Mountain Brook—City, City Hall, sanitary sewerage collection sys. $300,000 J. W. Goodwin Engineers, Martin Bldg., Birmingham, engrs. CD 11/9.

LOW BIDDERS

Calif., Burbank—City, City Hall, Dec. 5, 5,600 ft. 6 and 8 in. vitr. clay sanitary sewers in Screenland Drive and Clark Ave., from B. Bosnyak, 3014 Worthen Ave., Los Angeles, **$28,375.** Est. $25,000. CD 11/15—ENR 11/23 under LB.

★**N. Y., Idlewild**—Dpt. Marine & Aviation, Pier A, North River, New York, Zone 4, Dec. 15, Contr. 2423, Sect. 2, storm water sewer outlet from Baisley Blvd. to Bergen Basin at Municipal Airport, Contr. 10, from A. Catapano, 147-45 Springfield Blvd., Laurelton, **$1,140,824**; Contr. 2421, Sect. 1, Contr. 9, from Nicholas Di Menna Co., 125 Blondell Ave., New York, Zone 61, **$882,000** CD 12/8—ENR 11/30.

N. C., Wilmington—City, Dec. 13, refuse incinerator, from J. D. Orrell, Chestnut St., **$28,881.** CD 12/5—ENR 12/7.

Tex., Houston—City, M. H. Westerman, secy., City Hall, Dec. 6, sanitary sewers in Lum Terrace Addn., from R. P. Farnsworth Co., Inc., P. O. Box 4178. **$65,985.** J. Dannenbaum, City Hall, city engr.

Tex., San Antonio—Bexar Co. Water Control & Imprvt. Dist. 8, c/o C. W. Fenstermaker, pres., Terrill Hills, Dec. 8, sewage collecting system., pump. station, force and outlet mains incl. approv. 5.5 mi. sewers from Anderson & Watie Co., 1404 W. Martin St., **$65,033.** CD 11/28—ENR 11/30.

CONTRACTS AWARDED

†Fla., Fort Pierce—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C., addnl. sewage disposal facilities, ATB, NOY 10375, to McGuire Plumbing, Inc., 85 N.E. 62 St., Miami, **$42,685.**

WERS, etc. (Contracts Awarded, Cont'd.)

...fill., **Granite City** — E. B. Grantham, ...gnr. pump. equip. for sewer facilities. ... 11-302 N. to Fairbanks-Morse & Co., ... S. 8 St., St. Louis 2, Mo., **$31,218. FWA.** ...da 4/4. CD 10/16—ENR 10/19.

...Tex., **Dallas**—City, City Hall, sanitary ...wers in Beverly Hills, Dalview Simmitt ...dn., to Ben Sira & Co., 3901 Elm St., ...,945.

...Utah, **Dugway (P. O. Tooele)**—U. S. ...g., 1209 8 St., Sacramento 8, Calif., san... ...ry sewerage sys. at Proving Grounds, to ... J. Daum Constr. Co., 613 Beason Bldg., ...lt Lake City, **$33,806. Bids 12/6.**

BRIDGES

ROPOSED WORK

...La., New Iberia—Police Jury Iberia Par... ...h highway bridge over Warehouse Bayou ... point where State Hy. 157 intersects ...terway, near Weeks Island, approx. 1.5 ... above its mouth, Iberia Parish.

Missouri—State Hy. Comn., Jeffereson City, ...pected bids Dec. 8, bridges in Gentry and ...ckson Counties. CD 12/13, under LB—...NR 11/30, under BA.

...o. St. Louis—City, M. M. Kinsey, pres. ...P. Service, 304 City Hall, Zone 3, repair... ...r Chouteau Ave. viaduct extending from ...ndeventer Ave. to Tiffany St. $45,000. ...idges & Buildings Sect., W. Crecelius. ...ef, 301 City Hall, engr.

Ontario — Province of Ontario, Toronto, ...idge over Lake Chemong, in Peterborough. ...0,000. Dpt. Hys., Toronto, engrs.

IDS ASKED

Bids Asked December 29

Tennessee—State Hy. Dpt., Nashville, 0.568 ...l bridge and approaches over East Fork ...one's River on State Route 96, near Las... ...nas, S.A.P. 582-A, Rutherford Co.

Bids Asked January 5

Kentucky—At Office Dpt. Hys., Frankfort, ...eaning, painting steel bridge over Middle ...rk of Kentucky River, on Jackson-Boone... ...lle Rd. (Ky. 30), Proj. MP 13-67-4, Dist. 5. ...reathitt Co.; constructing culvert over Pond ...ne Creek at Raceland, Greenup-Ashland ...d U.S. 23, Proj. SP 45-31, Dist. 6, Greenup ...

Bids Asked January 8

New Jersey—S. Miller, Jr., comr. State Hy. ...pt. Trenton, making exploratory borings ...r 31 bridges on State Hy. Routes, 2, 4, ...18, 6 and 23, Passaic, Bergen and Sussex ...unties. Plans deposit $10. A. Lee Grover, ...renton, ch. clk.; adv. ENR 12/21.

OW BIDDERS

...Louisiana—State Hy. Dpt., Baton Rouge. ...ed River Bridge over Red River, Avoyelles ...arish, from W. R. Aldrich & Co., Kalwrah ...niversity Gardens, Baton Rouge, **$76,922.** ...D 12/4—ENR 12/7.

Tennessee—State Dpt. Hys. & P. Wks., ...ashville, Dec. 8, underpass, approaches at ...uisville & Nashville R.R. and State Rte. ..., near Dossett, Anderson Co., from R. E. ...artin, P. O. Box 149, Clinton, **$113,117.** ...D 11/22—ENR 11/30.

ONTRACTS AWARDED

Kansas—State Hy. Dpt., Wichita, two 75 ... and five 90 ft. continuous steel beam ...idge, Sedgwick Co., to Rhoades Const. ..., Newton, **$40,414.** Bids 11/28. CD ...1/20.

Oklahoma—State Hy. Comn., Oklahoma ...City, bridge, Muskogee Co., to J. A. ...aines, Muskogee, **$544,722,** est. $562,680*** ...oncrete bridges, Ottawa Co., to H. D. ...oungman, Baxter Springs, Kan., **$63,622,** ...st. $65,000***new bridge Wagoner Co., to ...owell & Pharoah, Henryetta, **$321,379,** ...st. $334,800***concrete bridge, LeFlore Co., ...R. R. Tway, 710 E. 19 St., Oklahoma ..., **$29,763,** est. $30,000. Grand total $959,... ...4. Bids 12/12, awarded 12/15. CD 12/6.

Tex., Edinburg—Hidalgo Co., Edinburg, ...n.-con. bridges, to Alkin & Hinman, P. O. ...ox 2350, Corpus Christi, approx. **$25,000.**

Que., Rock Forest—Orford Twp., c/o A. G. ...lls, secy., R. R. 1, Rock Forest, bridge over ...erry River, day labor under supervision ...pt. P. Wks., engrs., Quebec City. **$35,000.**

STREETS AND ROADS

ROPOSED WORK

Puerto Rico—Insular Interior Dept., San ...an, widening roadbed and reducing curves ... many sections along Rd. 1, from San ...an to Ponce, $331,320; constructing 2.2 ...ilometers road Barrazas, Carolina, **$56,000;** ... kilometers road, La Caballa, Quegradillas, ...7,000; 5.169 mi. kilometers road Juncos ...ominguito, Arecibo, $65,200; realignment ... Insular Rd. 53, where it intersects Rd. ... between Toa Alta and Toa Baja, **$33,000.**

IDS ASKED

Bids Asked December 28

Washington—B. Bantz, dir. State Hy. ...pt., Olympia, grading, draining 2.081 mi. Primary State Hy. 1, Chicken Coop Inn to Kalama, Project SN-U-FAP, 147-H (1), Unit 2, Cowlitz Co. Plans deposit $2.

Bids Asked January 4

Louisiana—State Dpt. Hys., D. Y. Smith, dir., Baton Rouge, gravel surfacing 21.6 mi. Maneuver Area Rds., Group 15, Sects. 1, 2 and 5, on State Routes 19 and 108, S.P. 737-00-20, and 7.6 mi. Maneuver Area Rds., Group 17, Sect. 6 and 7, State Route 5, S.P. 737-00-22, both Grant and Winn Parishes. Plans deposit $1 each; 5-4 ft. x 4 ft. rein.-con. box culvert, etc. 0.011 mi. Houma-Raceland Hy., on State Rt. 2, S.P. 5-05-16, Terrebonne Parish. Plans deposit $2.50.

Bids Asked January 5

Kentucky—At office Dpt. Hys., Frankfort, revision in alignment 0.417 mi. Maysville-Paris Rd. (US 68), Project SP 81-175, Dist. 4, village of Washington, Mason Co.

Bids Asked January 9

Calif., Los Angeles—Bd. Supervs. Los Angeles Co., Hall of Records, imprv. 3.900 lin. ft. Century Blvd., Vermont to Denker Sts., east of Inglewood, involving 13,407 cu. yd. excav., 24,595 sq. yd. selected 12 in. base and 2 in. asphaltic concrete, curbs, gutters, etc. Over $25,000. Plans deposit $5. O. F. Cooley, road comr.

Bids Asked January 10

Louisiana—State Dpt. Hys., Baton Rouge, shaping roadway, gravel surfacing, etc. 5.3 mi. Maneuver Area Roads, Group 3, Sect. 2, State Route 609, S.P. 737-00-08, Contr. 2, Natchitoches Parish; 12 mi. Maneuver Area Roads, Group 5, Sect. 1, State Route 6, S.P. 737-00-10, Contr. 2, Sabine Parish; 10.1 mi. Maneuver Area Roads, Group 9, Sect. 5, State Route 278-D S.P. 737-00-14, Contr. 2, Rapides Parish; 5.1 mi. Maneuver Area Roads, Group 11, Sect. 4, State Route 113, S.P. 737-00-16, Contr. 2, Vernon Parish; 8.1 mi. Maneuver Area Roads, Group 13, Sects. 5 and 20, State Routes 113 and 467, S.P. 737-00-18, Contr. 2, Beauregard Parish. Plans deposit $1 each.

Bids Asked

Missouri—State Hy. Comn., Jefferson City, rejected bids Dec. 8, imprv. 0.391 mi. Jackson Co. CD 12/13, under LB—ENR 11/30 under BA; imprv. 0.325 mi. Gentry Co., CD 11/28—ENR 11/30.

LOW BIDDERS

Illinois—Div. Hys., Springfield, Dec. 12, imprv. 0.65 mi. Williamson and Jackson Counties, from Burch Constr. Co., 119 E. Washington Ave., Madison, Wis., **$36,619** ***11.05 mi. Montgomery and Macoupin Counties and 15.66 mi. Livingston and Grundy Counties, from Standard Paving Co., 30 N. La Salle St., Chicago, **$58,130** and **$77,017** respectively CD 12/4—ENR 12/7; gravel or crushed stone surfacing, bituminous surfacing 4.6 mi. Mt. Auburn-Sangamon Ordnance Plant Rd., D.A.-W.I. Proj. 30A (1), Dist. 6, Christian Co., from Joyce Bros. Contg. Co., 918 Myers Bldg., Springfield, **$38,288.**

Louisiana—State Hy. Dpt., Baton Rouge, Dec. 6, furnishing 7,291 cu. yd. sand clay gravel surfacing material spot dumped on certain roads, Wards 1, 2, 4, 5, 7, 8 and 9, S.P. 703-01-02, Caldwell Parish, from Monroe Sand & Gravel Co., Monroe, **$33,280.** CD 11/27—ENR 11/30.

Louisiana—State Dpt. Hys., Baton Rouge, Dec. 13, imprv. 9.1 mi. Rapides Parish, from Barber Brothers Co., Reymond Bldg., Baton Rouge, **$37,106.** CD 12/4—ENR 12/7.

Missouri—State Hy. Comn., Jefferson City, Dec. 8, imprv. 1.088 mi. Pulaski Co., from Atkinson Windle Co., Chillicothe, **$99,378;** 1.356 mi. Greene Co., from M. J. Menefee Const. Co., Sedalia, **$42,063.** CD 11/28—ENR 11/30.

★**Ohio**—State Hy. Dpt., Columbus, Dec. 12, imprv. 0.523 mi. Van Wert Co. and 3.813 mi. Lucas Co., from S. E. Johnson Co., 218 Terminal Bldg., Toledo, Zone 2, **$34,005** and **$76,335** respectively, est. $34,-330 and $76,400 respectively***0.19 mi. Trumbull Co., from Kane, O'Hara & Haenny, 65 W. Indianola Ave., Youngstown, **$26,146*****3.872 mi. Medina Co. and 6.91 mi. Columbiana Co., from A. J. Baltes, Inc., 11 Olive St., Norwalk, **$318,364** and **$122,565** respectively***0.468 mi. Brown Co., from V. N. Holderman, 297 S. High St., Columbus, Zone 15, **$103,230*****5.345 mi. Muskingum Co., from Fenton Const. Co., Box 445, Ashland, **$112,213,** est. $117,600***2.7 mi. Lucas Co. from Arthur S. Langenderfer & Co., 4690 W. Bancroft St., P. O. Box 815, Toledo, **$28,573,** est. $28,600***1.889 mi. Greene Co. from Hinton & Smalley, 304 W. Market St., Celina, **$102,267*****0.198 mi. Ashtabula Co., from Porterfield-Binger Const. Co., 222 W. Royen Ave., Youngstown, Zone 2, **$49,418,** est. $51,400. CD 12/7.

★**Texas**—State Hy. Comn., Austin, Dec. 12, from Austin Road Co., 1813 Clarence St., Dallas, imprv. 16.836 mi. Leon and Madison Counties, **$236,131;** 13.045 mi. Hunt Co., **$136,024;** 11.386 mi. Hopkins Co., **$126,-999*** from R. P. Farnsworth & Co., Inc., P. O. Box 4137, Houston, 17.931 mi. Wharton and Fort Bend Counties, **$194,752;** 8.251 mi. Harris Co., **$116,086;** 20.177 mi. Harris Co., **$204,408*** from Aiken & Hinman, P. O. Box 2350, Corpus Christi, 4.831 mi. Nueces Co., **$51,698*** from T. M. Brown & Son, P. O. Box 608, Baird, 12.051 mi. Taylor Co., **$488,072;** from J. F. Buckner, P. O. Box 76, Cleburne, 14.241 mi. Bell Co., **$277,015*** from Geo. Kies Co., 1700 Pease Rd., Austin, 13.168 mi. Refugio Co., **$133,645;** 5.096 mi. Wharton Co., **$41,109*** from A. L. Mays, Jasper, 57.1 mi. Jasper, Newton and Sabine Counties, **$68,687*** from Thomas & Ratliff, Rogers, 12.806 mi. Brown Co., **$86,524*** from Austin Bridge Co. & Coastal County Co., 1813 Clarence St., Dallas, reconstructing Intracoastal Canal Bridge fenders, Jefferson Co., **$48,322.** CD 12/4.

Texas—State Hy. Comn., B. P. Gentry, chn., Austin, Dec. 12, imprv. 17.362 mi. Freestone Co., and 15.472 mi. Walker Co., from Towles Constr. Co., Carrollton, **$190,-437** and **$189,421** respectively. CD 12/4.

Washington—State Hy. Dpt., Olympia, Dec. 5, imprv. 2.736 mi. Cowlitz Co., from Leonard & Slate, Pittock Block, Portland, Ore., **$439,571.** CD 11/13—ENR 11/16.

CONTRACTS AWARDED

Minnesota—State Hy. Dpt. at District Office, Owatonna, crushing, screening, loading, hauling about 23,000 cu. yd. gravel for production of mineral aggregate to be placed in stockpiles for Maintenance Div., Owatonna, to B. Backstrom, Cannon Falls, **$28,113.** Bids 12/1. CD 11/15—ENR 11/23.

★**Oklahoma**—State Hy. Comn., Oklahoma City, imprv. 14.5 mi. Creek Co., to Oklahoma Paving Co., 1651 Exchange Ave., Oklahoma City, **$41,857,** est. $42,200***17.4 mi. Lincoln Co., to McConnell & Co., Muskogee, **$28,997;** est. $30,000***6.9 mi. Le Flore Co., to Amis Constr. Co., 1647 Exchange Ave., Oklahoma City, **$92,524,** est. $94,476*** 4.6 mi. Osage Co., to R. R. Ryan Constr. Co., Insurance Bldg., Oklahoma City, **$124,314,** est. $126,760***imprv. hy. from Delaware Co. line north to junction with U.S. 60, near Wyandotte, Ottawa Co., to S. E. Evans Constr. Co., 2914 N. O St., Fort Smith, Ark., **$251,082,** est. $255,000. Grand total **$540,754.** Bids 12/12. CD 12/6.

Ont., Sarnia—Lambton County Council and Suburban Area Roads Comn., Sarnia, asphalt paving 6 mi. Plank Rd., own forces under supervision J. C. Monteith, co. Engr., **County Bldgs., Sarnia. $90,000.**

EARTHWORK, WATERWAYS

PROPOSED WORK

†**Idaho, Coeur d'Alene**—Farm Security Admin., 950 Bway., Denver, Colo., bids soon, land leveling, grading, irrigation structures, $55,000.

Manitoba—Dominion Govt., Ottawa, Ont., ★flood prevention works along Assiniboine River at Brandon, $50,000; Winnipeg, $100,000; Portage La Prairie, $75,000; reservoir St. Lazarre, Postal Dist. Brandon, $150,000; reservoir at Shellmouth, $150,000. Prairie Farm Rehabilitation Comn., McCallum Hill Bldg., Regina, engr.

Ontario—Province of Ontario, c/o Ministry of Planning & Development, Toronto, plans flood control works along Etobicoke River, Brampton, $50,000; along Humber River, Mimico, $50,000.

Saskatchewan—Dominion Govt., Ottawa, Ont., reservoir construction, providing 2,722,500,000 gal. water capacity, 1 at Annie Laurie Lake and 1 at Lomond Lake. $200,000. Prairie Farm Rehabilitation Comn., McCallum Hill Bldg., Regina, engr.

BIDS ASKED

Bids Asked December 29

†**Louisiana**—U. S. Eng., foot of Prytania St., New Orleans, dredging, disposing approx. 50,000 cu. yd. material in Belle Pass Outlet of Bayou Lafourche, Solic. No. 16-047-45-76, Lafourche Parish.

Bids Asked January 10

†**Wash., Sunnyside**—Bureau Reclamation, Dpt. Interior, W. R. Young, acting chief engr., Yakima, placing earth blanket mile 28 to mile 59, Yakima Ridge Canal, Roza Div., Yakima Project, 21 mi. northwest to 4 mi. north of here, Spec. 1789-D.

Bids Asked January 18

†**South Dakota**—Bureau Reclamation, Dpt. Interior, W. R. Young, acting ch. engr., Denver, Colo., furnishing, del. f.o.b. cars at shipping point or f.o.b. cars Hill City (Smith's Spur), two 27 in. hollow jet valves with control stands, intermediate shafts and couplings and wrenches for installation in outlet works at Deerfield Dam, Rapid Valley Project, Spec. 1788-D.

Bids Asked

†**N. D., Williston**—Farm Security Admin., 950 Bway., Denver, Colo., grading 8,000 acres. $300,000. CD 8/15—ENR 8/17.

†**S. D. Hot Springs**—Farm Security Admin., 950 Bway., Denver, Colo., levelling 8,000 acres. $300,000.

LOW BIDDERS

N. J., Jersey City—City, City Hall, timber, steel pier bulkhead reconstruction, from Allen N. Spooner & Son, Inc., Pier 11, North River, New York, N. Y. **$78,940.**

CONTRACTS AWARDED

†**Fla., Panama City**—U. S. Eng., Grant St. west of Westwood St., Mobile, Ala., erosion

EARTHWORK, etc. (Contracts Awarded, Cont'd.)

protection works for waterway from Choctawhatchee Bay to West Bay, near here, to Wright Contg. Co., Columbus, Ga., **$127,387.**

New Jersey—State Dpt. Conservation & Development, State House, Trenton, repairs, imprvs. to Delaware and Raritan Canal feeder, Trenton Sect., to Union Bldg. & Const. Co., 631 Main Ave., Passaic, **$114,575.** Bids 12/4. CD 11/17—ENR 11/23.

Wash., Bellingham—Port of Bellingham, H. F. Isler, port mgr., Municipal Dock, dredging 4,800 cu. yd. and placing material on Squalicum fill, to Cal Branham, Anacortes, **$20,000.** Awarded 12/6.

LATIN AMERICA

Chile, Santiago—Republic of Chile, plans airfield construction throughout country. 20,000,000 pesos (voted).

Cuba, Havana—Municipality, will pave 5 Ave., by day labor. **$25,000.**

Cuba, Havana—Republic of Cuba, Havana, plans reconstructing Mazorra Hospital for Insane. $150,000. Dpt. P. Wks., Havana, engr.

Cuba, Havana—Republic of Cuba, Havana, will construct roads linking Barocoa to Holguin, Baguano Cue to Mayari, to open up Baracoa to land traffic, and construct series of roads linking Trinidad to Sancti Spiritus, by day labor. **$4,000,000.** National Development Comn., Havana, engr.

Ecuador, Quito—Republic of Ecuador, plans network of airfields throughout country. $1,000,000 (voted).

Mexico, Chihuahua — Chihuahua Cattlemen's Union, Chihuahua, plans meat packing house and refrigeration plant. $350,000.

Mexico, Mexico City—Criscar, S. A. (Lic. Rafael Mendez, mgr., V. Carranza, 48-402, Mexico, D. F., plans plant for manufacture carbons for electric use, graphite electrodes and porcelain isolators. $150,000.

Mexico, Mexico City—Equipos Hobbs, S. A., William Hamer, mgr., Ave. Juarez, 30-516, Mexico, D. F., plans passenger and freight trailer mfg. plant. $150,000.

Mexico, Mexico City—Instituto Mexicano de Seguro Social, Rosales 11, Mexico, D. F., takes bids within 45 days, 520 bed public hospital. $300,000.

Mexico, Mexico City—Republic of Mexico, Mexico City, plans irrigation projects to irrigate cotton land in Lower California, valley along Rio Fuerte and Lanuna Valley. 3,000,000 pesos.

Mexico, Mexico City—Trailers de Mexico, S. A., Ave. Juarez, 4-706, Mexico, D. F., plans factory for passenger and freight trailers. $125,000.

Peru, Lima—Municipality, plans airport imprvs. 1,200,000 Soles.

Peru, Lima—Peruvian Airport and Commercial Aviation Corp., **plans airport construction. $1,538,000 appropriated.**

PUBLIC BUILDINGS

PROPOSED WORK

†Ariz., Tucson—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $200,000.

†Ariz., Winslow—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, Calif., 55 family stop-gap dwelling units, Ariz. 2373.

†Ariz., Yuma—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, Calif., 50 family stop-gap dwelling units, Ariz. 2372.

†Calif., Bakersfield—Pub. Housing Auth., NHA, 760 Market St., Phelan Bldg., San Francisco, 47 family stop-gap dwelling units, Calif. 4966.

†Calif., Barstow—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, 50 family stop-gap dwelling units, Calif. 4961.

†Calif., Mojave—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, 40 family stop-gap dwelling units, Calif. 4967.

†Calif., San Bernardino—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, 50 family stop-gap dwelling units, Calif. 4965.

†Calif., Stockton—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, 23 family trailers, Calif. 4970.

†Calif., Taft—Pub. Housing Auth., NHA, Phelan Bldg., 760 Market St., San Francisco, 8 family trailers, Calif. 4972.

†Calif., Tracy—Pub. Housing Auth., NHA, 760 Market St., San Francisco, 35 family trailers, Calif. 4971.

D. C., Wash.—District Comrs., District Bldg., 2 detention dormitories, District Training School for Mental Rehabilitation Services. $268,000.

D. C., Wash.—District Comrs., District Bldg., 8 room extensible school, vicinity of Fifteenth and Hamlin Sts. N.E., incl. treatment of grounds, $167,500; 8 room addn. to Kimball School, incl. assembly hall-gymnasium, remodeling present bldg., treatment of grounds, $250,000.

★**D. C., Wash.**—District Comrs., District Bldg., pediatrics bldg., at Gallinger Municipal Hospital, $650,000; laboratory bldg., $200,000, for Health Dpt.

★**D. C., Wash.**—District Comrs., District Bldg., receiving home and classification center $285,000; new bldgs. $1,250,000, and new heating plant $120,000 at Home for the Aged and Infirm, for Public Welfare, Family Welfare Service.

†D. C., Wash.—Federal Works Agency, 18 and F Sts. N.W., Zone 25, 3 story, masonry, concrete Parkside School, Anacostia Ave. and Grant St. N.E. $218,000.

†D. C., Wash.—Pub. Housing Auth., NHA, Longfellow Bldg., 1201 Connecticut Ave. N.W., Zone 25, cancelled bids to have been opened Dec. 13, 300 dwelling units, D. C. 1-6. Lack of priority. CD 11/15—ENR 11/23.

†Fla., Bay Pines—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $440,000.

†Fla., St. Petersburg—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., expan. Bay Pines Veterans Hospital. $440,000.

†Ind., Burns City—Pub. Housing Auth., NHA, 201 N. Wells St., Chicago 6, Ill., 100 unit stop-gap housing, Ind. 12198, for Navy.

★**†Ia., Des Moines**—Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, O., addnl. plant bldgs. $1,500,000. Defense Plant Corp. will finance.

Ia., Nevada—Story Co., H. E. Hadley, chn., City Hall, plans by Dougher, Rich & Woodburn, Old Colony Bldg., Des Moines, hospital. $200,000.

†Mass., West Roxbury—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $320,000.

†Mich., Lansing—Pub. Housing Auth., NHA, 2072 E. 9 St., Cleveland, O., 50 trailer housing, Mich 20275.

†Minn., Minneapolis — Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $295,000.

†Nev., Carlin—Pub. Housing Auth., NHA, 785 Market St., San Francisco, Calif., plans 27 unit family stop-gap housing, Nev. 26172.

†Nev., Reno—Pub. Housing Auth., NHA, 785 Market St., San Francisco, Calif., 20 unit family trailer housing, Nev. 26174.

★**†N. J., Lyons**—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $575,000.

†N. Y., Batavia—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $480,000.

†N. C., Fayetteville—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $230,000.

★**†O., Dayton**—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $575,000.

†O., Lima—Pub. Housing Auth., NHA, 2073 E. 9 St., Cleveland, Zone 15, 300 unit family stop-gap housing, Ohio 33301; 120 unit single person (male) housing, Ohio 33306.

†O., Muskogee—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $430,000.

★**Pa., Greensburg**—Westmoreland County Hospital Assoc., Miss Irwin, supt., 532 N. Pittsburgh St., sketches by P. C. Dowler, 803 Century Bldg., Pittsburgh, 4 story, bsmnt., 42x140 ft., brick, tile backup, steel on rein.-con. frame hospital addn. $500,000.

†S. C., Columbia—Veterans Admin., Vermont between H and I Sts. N.W., Wash. 25, D. C., hospital. $300,000.

Tex., Palacios—U. S. Eng., 25 St. and Avenue F, Galveston, housing, etc. $150,000.

★**†Tex., Waco**—Veterans Admin., Vermont Ave. between H and I Sts. N.W., Wash. 25, D. C., hospital. $635,000.

★**†Wash., Yakima**—Yakima Valley Memorial Hospital Assn., c/o E. B. Mueller, Holtzinger Bldg., hospital. $600,000. **FWA** funds denied. CD 11/7—ENR 11/9.

†Wis., Wood—Veterans Admin., Vermont Ave between H and I Sts. N.W., Wash. 25, D. C., hospital remodeling incl. new heating tunnel, remodeling kitchens. $285,000.

★**Que., Quebec City**—Hotel Dieu du Precieux Sang, 11 Cote du Palais St., plans by A. Dufresne, 143 Royale St., Beauport, hospital addn. $800,000. E. Cormier, 2039 Mansfield St., Montreal, engr.

BIDS ASKED

Bids Asked After December 27

†N. C., Morehead City—Federal Works Agency, 606 State Planters Bank Bldg., Richmond 19, Va., addn. Morehead City Hospital, NC 31-292. $179,000. G. W. Carr, Durham, archt. CD 11/16—ENR 11/23.

Bids Asked December 28

†Wash., Ellensburg—Pub. Bldgs. Adm. 18 and F Sts. N.W., Wash. 25, D. C., miscellaneous repairs to post office.

Bids Asked December 29

†Mich., Royal Oak—Royal Oak Twp., room, brick, steel, concrete school, 20-362. **FWA.** Extended date. George & Mason & Co., 409 Griswold St., Detroit Zone 26, archts. CD 12/7—ENR 12/14.

†Miss., Pascagoula — Pascagoula Separate School Dist., 1 story Junior H School, Miss. 22-210. $174,318. **FWA.** tended date. Hedrick & Lindsey, 818 Son ern Standard Bldg., Houston 2, Tex., arch CD 11/28—ENR 11/23.

Bids Asked In January

†Md., Dundalk—Federal Works Agen 606 State Planters Bank Bldg., Richmo 19, Va., high school, Md. 18-231, for Ba more County Bd. Educ. $800,000. Pal & Lamdin, 1020 St. Paul St., Baltimo archt. Van R. P. Saxe, 100 W. Monume St., structural engr. Egli & Compf, St. Paul St., mechanical engr.

Bids Asked January 4

†N. C., Durham—Federal Works Agen 601 State-Planters Bank Bldg., Richmo 19, Va., altering 3 bldgs., constructing new bldgs., incl. shower bldg., heating pl to house low-pressure steam boiler. 31-308, for United States Pub. Health Se Federal Security Agency, Bethesda Stat Wash. 14, D. C. $77,800. Plans deposit G. W. Carr, 3rd, Durham, archt. CD 10/ ENR 10/26.

Bids Asked January 8

N. J., Cape May—T. Millet Hand, may and I. Grant Scott and S. Eldredge, com City Hall, reconstructing convention h S. C. Schellenger, city clk. Plans dep $15: adv. ENR 12/21. CD 10/22—ENR 10

Bids Asked January 10

†Mont., Billings—St. Vincent's Hospi Billings, nurses' training and housing bl Mont. 24-114-N. $249,910. **FWA.** J. Link & Co., Billings, archt. CD 11/ ENR 11/30.

Bids Asked January 12

★**Calif., Long Beach**—City Manager, C Hall, 5,000,000 cu. ft. capacity gas st age holder, tank and fdn., Spec. C-4 G. E. Baker, City Hall, city engr., $700,

Bids Asked January 23

†Alaska, Fairbanks — Federal Wo Agency, Alaska Bldg., Seattle 4, Wash. story, 27x30 ft. and 27x49 ft. frame addi recreation bldg., Alaska 50160-F. Plans deposit $10. CD 10/9—ENR 10/12.

LOW BIDDERS

★**†Calif., Alameda**—Pub. Housing Au NHA, Phelan Bldg., 760 Market S San Francisco, Dec. 13, 340 war dwell units, for Navy personnel, Calif. 4895 from L. Epp, 317 Broderick St., San Fra cisco, **$749,877.** CD 11/29.

Kentucky—State Hy. Dpt., Frankf Dec. 15, concrete block highway garage a oil and grease bldg. 255-F, Pike Co. W. T. Congleton Co., Lexington, **$43,**

CONTRACTS AWARDED

†Ala., Huntsville—U. S. Eng., Grant west of Westwood St., Mobile, addnl. fac ties at Redstone Arsenal, to C. G. Kersh Contg. Co., 2212-20 Ave. S, Birmingha **$400,000.**

★**†Calif., Long Beach**—Pub. Hous Auth., NHA, 816 W. 5 St., Los Angel 268 temporary family war dwelling uni Calif. 4904-N, to Wesco Constr. Co., Hyperion Ave., Los Angeles, **$639,429.** 12/7—ENR 12/14, under LB.

★**†Calif., Long Beach**—Yards & Dock Navy Dpt., 18 St. and Constitution Av N.W., Wash. 25, D. C., 600 bed hospi addn., at Naval Hospital, NOY 8114, to E. Campbell, Box 2185, Terminal Anne Los Angeles, **$1,357,400.** CD 12/14.

★**†Calif., Oceanside**—Pub. Housing Auth NHA, 2100 Linda Vista Rd., San Dieg 450 war dwelling units, Calif. 4900-N, to Sh maker & Evans, 816 W. 5 St., Los Angel **$1,118,612.** CD 12/4—ENR 12/7.

†O., Dover—General Electric Co., 1 Ri Rd., Schenectady, N. Y., brick, steel, facto addn., alterations, to James C. F. Shafer C Caxton Bldg., Cleveland. Est. **$100,000.** D fense Plant Corp. will finance. CD 2/ ENR 2/24.

★**†Pa., Phila.**—Yards & Docks, Navy Dep 18 St. and Constitution Ave. N.W., Was 25, D. C., convalescent ward, accoustic cli galley, mess hall and connecting corrido at Naval Hospital, Spec. 15175, NOY 16 to Hughes-Foulkrod Co., Schaff Bldg., **$95 500.** Bids 11/30, awarded 12/7. CD 11/

†Utah, Dugway (P. O. Tooele)—U. Eng., 1209 8 St., Sacramento 8, Calif., (g at Dugway Proving Grounds, to R. Daum Constr. Co., 613 Beason Bldg., S **Lake City, $92,290. Bids 12/6.**

COMMERCIAL BUILDINGS

PROPOSED WORK

Mass., East Boston (sta. Boston)—Fra ciscan Missionaries of Mary, 150 Orie Ave., sketches by J. E. Kelley, 715 Main S Randolph, brick, steel hospital. $150,00

MMERCIAL BLDGS. (Proposed Work, Cont'd.)

Pa., Hogestown—W. E. Deakins, Hogestown, preparing plans 40 residences. $150,000.

Tex., Beaumont—H. A. Perlstein, Perlstein Bldg., bids soon 5 story, approx. 60x112 ft., with 57x80 ft. wing, steel frame, brick, reinforced con. office. Wallace B. Livesay, Annex Jacinto Life Bldg., and Stone & Pitts, Rehue Bldg., archts. CD 11/15—ENR 11/23.

Tex., Laredo—J. R. Newton, Brownwood, plans by E. T. Glasgow, 308 Petroleum Bldg., Fort Worth, 32 dwellings. $175,000.

Tex., Houston—Houston Heights Hospital, 1117 Ashland St., constructing brick, tile and concrete clinic bldg. and remodeling hospital. $150,000. E. M. Wyatt, 212 E. Cowan Ave., engr.

NEW BIDDERS

N. C., Ahoskie-Roanoke—Chowan Hospital, W. H. Basnight, pres., J. B. Burden, Jr., Dec. 13, hospital, from G. W. Kane, Durham. **$220,706.** CD 11/30—ENR 12/7.

CONTRACTS AWARDED

Calif., Long Beach—Artcraft Builders, 4900 So. Western Ave., Los Angeles, 150 duplex dwellings, Miramar Ave. and Grand Ave. near Lakewood Blvd. Owner builds. $1,000,000.

Conn., Bridgeport—American Sons & Daughters of Carpatho-Russia, Inc., 370 Mill St. Ave., Bishop O. P. Chornick, 1 story, reinf. con., 82x108 ft. church, Mill Hill Ave., to Prospect Constr. Co., Inc., 74 Goodsall St., Stratford. $200,000. Bids 12/9. J. J. Hamblin, Undine Bldg. and Milford, archt. Harrigan & Hill, 37 Whitney Ave., New Haven, engrs. CD 12/1 —ENR 12/7.

Conn., Fairfield—Ralph W. and R. O. Reynolds, 246 Main St., Danbury, 500 or more rustic cabin development, year-round construction, artesian wells and septic tanks, 1½ macadam road, Pine Island and vicinity, New Fairfield, near here. Owner builds. Over **$150,000.**

Pa., Chester—Home City Constr. Co., 525 Edgemont Ave., 24 semi-detached residences and 10 semi-detached duplexes, to Wm. M. and Geo. I. Bricker, 2 Ridley Ave., Chester. **$300,000.**

Pa., Springfield (br. Media)—Springfield Gardens Co., c/o H. Takiff, Real Estate Trust Bldg., Phila., ninety-one 2½ story residences, to Edwin C. Pritchard, Bishop Hollow Rd. and School Lane, Newton Square, $1,800 to **$750,000.** Awarded Dec. 4. J. L. Ludwig. Farmers and Mechanics Bldg., West Chester, archt.

INDUSTRIAL BUILDINGS

PROPOSED WORK

Ark., Harrison—MACHINE SHOP—Missouri & Arkansas Ry. Co., R. C. Lowrey, ch. engr. Harrison, rebuilding machine shop, destroyed by fire. Over $40,000.

Conn., Norwalk — FACTORY — Norwalk Tire & Rubber Co., Winnipauk, Norwalk, 2 story, 80x100 ft., brick, rein.-con. factory. $200,000. Fletcher Thompson, Inc., 211 State St., Bridgeport, engrs.

Md., Baltimore—WAREHOUSE, etc.—Jas. E. Edmunds, Jr., and H. G. Hall, archts., 9 Calvert Bldg., Zone 2, soon let contract, 1 story, part bsmnt., 160x240 ft., slab brick mill warehouse and office bldg., concrete silos, for Milcor Steel Co., Fayette and Oldham Sts. $300,000.

Md., Middle River—PLANT—Glenn L. Martin Co., Middle River, rejected bids Dec. 7, plant alterations. Will readvertise. CD 12/18, under Industrial, and ENR 12/7, under Unclassified.

Mass., Springfield—MILL—General Webbing Corp., 235 Mill St., will not take bids until next spring, 2 story, bsmnt., 80x162 ft., brick, steel, concrete mill addn. $75,000. H. Bigelow, 14 Irvington St., archt. CD 12/7—ENR 11/2.

Mich., Detroit—PLANT—Metal Products & Mfg. Co., 20530 Hoover Ave., plans by I. M. Lewis, 1704 Cadillac Sq. Bldg., brick, steel, concrete metal working plant addn. $55,000.

Mich., Oak Park (sta. Flint)—FACTORY, etc.—I. T. Wedin & Co., 22748 Woodward Ave., Ferndale, plans by C. W. Ditchy, 705 Lincoln Bldg., Detroit, brick, steel, concrete factory and office bldgs. $75,000.

Minn., Mora — PLANT — Land O'Lakes Creameries, Inc., L. L. Getten, production mgr., 2301 Kennedy St. N. E., Minneapolis, plans by M. O. Buetow, 1931 University Ave., St. Paul, 1 and 3 story, 110x134 ft. milk dehydrating plant, masonry. $150,000.

Miss., Batesville — FACTORY — Batesville Mfg., Batesville, plans by Miss E. L. Maloney, Millsaps Bldg., Jackson, 117x127 ft. knitting hosiery factory, stucco, steel. $60,000. Bids 1/31—ENR 9/7, under Public.

N. Y., Ballston Spa — PLANT — American Glove & Leather Co. Inc., Ballston Spa, soon let contract factory addn. Plans deposit $25. Fuller & Holroyd, 257 Bway., Troy, engrs. CD 9/28—ENR 10/5.

★**O., Bellevue** — SOLVENT PLANT — Spencer-Kellogg Co. and Kellogg & Sons, Inc., Niagara Sq., Buffalo, N. Y., solvent plant to extract oil from soybeans, incl. 36 silos, 138 ft. high, roads, 100,000 gal. reservoir, workhouse, flaking and welfare bldgs., oil storage, boiler house, power plant and train shed, on 27 acre site. Approx. $3,000,000.

Ore., Astoria—PLANT—Sebastian-Stuart Fish Co., Spokane St. Dock, Seattle, Wash., 2 story, 100x135 ft. fish plant, rein.-con., frame, $60,000. E. Isaacson, 120 Grand St., engr. CD 12/12—ENR 12/14.

Ore., Oregon City — WAREHOUSE — Clackamas Wholesale Grocery Co., Oregon City, plans by Annand & Kennedy, Central Bldg., Portland, 1 story, bsmnt. warehouse. $40,000.

Pa., Harrisburg — WAREHOUSE — J. R. Stine, 119 N. 2 St., plans by B. E. Starr, 239 Woodbine St., warehouse. $75,000.

Pa., Phila. — PLANT — Heintz Mfg. Co., Front St. and Olney Ave., soon lets contract concrete, brick mfg. bldg. and shipping bldg., altering Bldg. 24. $150,000.

Pa., Pittsburgh—PLANT—Republic Bank Note Co., Div. Security Bank Note Co., 3113 Forbes St., plans by Hunting, Davis & Dunnells, engrs.-archts., Century Bldg., 1 story, 40 x 50 ft., brick, steel beam, concrete slab mfg. bldg. addn. $50,000.

Tenn., Memphis—COLD STORAGE PLANT —Tennessee Cold Storage & Warehouse Co., T. Jefferson, pres., 440 N. 2 St., 1 story, brick, concrete cold storage plant, with docks for trucks, railway sidings length of structure east and west sides, bldg. to face 190 ft. Georgia St., by 150 ft. deep, to V. & M. Constr. Co., 166 Monroe Ave. Est. **$150,000** with site. CD 7/21—ENR 7/27.

Tex., Dallas—SHOP—Griffin Tank & Welding Service, 3027 Elm St., brick, concrete shop. $40,000.

Tex., Dallas—SHOP—L. R. Kopahl, 6102 Revera Dr., plans by D. D. Swindle, 212 E. Davis St., brick, tile, concrete shop. $45,000.

Tex., Dallas—STORAGE—Ring & Brewer Bldg., 1803 Elm St., constructing 2 floors for storage and air-conditioning entire bldg., to Carpenter Bros.. Ring & Brewer Bldg., approx. **$45,000.** CD 12/8—ENR 12/14.

Tex., Dallas—WAREHOUSE—Gus B. Volkus, 1814 Allen Bldg., warehouse. $40,000.

Tex., Houston—FREIGHT DEPOT—International & Great Northern Railroad Co., C. S. Kirkpatrick, ch. engr., Union Station, soon lets contract rebuilding 50x360 ft., rein.-con., brick, structural clay tile, etc., freight station and loading facilities. $100,000. CD 12/12—ENR 12/14.

Tex., Houston—WAREHOUSE—S. Myers, Inc., 600 Lockwood Dr., soon lets contract 1 story, bsmnt., 125x200 ft., masonry, rein.-con. warehouse. $70,000. Finger & Rustay, Natl. Standard Bldg., archts. CD 10/18—ENR 10/26.

★**Tex., Midland** — PLANT — Metropolitan Natural Gas Co., c/o C. V. Lyman, Midland, natural gasoline plant, $2,000,000.

Tex., San Antonio—PLANT—Berry Packing Co., 400 Medio St., rein.-con. packing plant, to A. E. Rheiner & Co., 712 American Hospital Bldg., approx. **$40,000.** CD 12/11 —ENR 12/14.

Tex., San Antonio—BREWERY—San Antonio Brewing Assn., 312 James St., plans by B. Cocke, 1504 Milam Bldg., brewery unit. $40,000.

Tex., San Juan—SHOP, etc.—Wax-Pax Co., N. Shary Rd., Mission, 2 story, metal, stucco, concrete shop and storage bldg. $40,000.

Tex., Weslaco—PLANT—Rio Grande Valley Citrus Exchange, Mission, 1 story, 129x280 ft., brick, rein.-con. processing plant unit, to Noser Constr. Co., State Bank Bldg., McAllen, approx. **$50,000.** CD 12/21/43—ENR 12/23/43.

Tex., Wichita Falls—PLANT—C. L. Murph & Associates, 1112—7 St., 600 locker plant unit, day labor. Approx. **$40,000.** CD 12/8 —ENR 12/14.

★**Tex., Wink**—COMPRESSOR STATION—Metropolitan Natural Gas Co., c/o C. V. Lyman, Midland, large compressor station (to serve proposed 26 in. natural gas line between Midland and Los Angeles). $500,000.

Utah, Salt Lake City—PLANT—Utah Oil Refining Co., Utah Oil Bldg., oil skimming plant, Surplus Canal, Everett St.

Wash., Renton—GARAGE—Transportation Service Co., 528 Bronson Way N., 145 x 145 ft. garage. $70,000.

Wash., Walla Walla — WAREHOUSE — Continental Can Co., 13 and Dell Sts., warehouse exten. to plant. $100,000.

★**Wis., Beloit**—GENERATING PLANT—Wisconsin Power & Light Co., 122 W. Washington St., Madison, generating plant addn. and changes in transmission sys. $2,968,492.

Wis., Green Bay—GARAGE—Schmitz Motor Co., 153 N. Bway., 2 story garage. $60,000.

★**Ont., London**—PLANT—Imperial Tobacco Co. of Canada, Ltd., 3810 St. Antoine St., Montreal, Que., 4 brick, rein.-con. plant bldgs. $1,000,000.

★**Ont., St. Thomas** — PLANT — Timken Roller Bearing Co., 1835 Dueber Ave. S. W., Canton, O., plans by Prack & Prack, 36 James St. S., plant. $600,000. CD 11/13 —ENR 11/16.

Que., Berthierville — FACTORY — Biron Knitting Mills, Ltd., 13 Jacques Cartier St., reconstructing 50 x 66 ft. and 50 x 55 ft. factory, Montcalm St. $62,000.

Que., Quebec City—FACTORY—J. B. Mercier, 43 Crown St., factory, Blvd. Charest. $40,000.

Que., Quebec City—PLANT — Universal Equipment, Ltd., 253 St. Paul St., plant. $50,000.

BIDS ASKED

Bids Asked December 27

N. J., Weehawken (sta. Union City)—TRUCKING TERMINAL — Gratale Bros., Inc., 130 Harrison St., Hoboken, 1 and 2 story, 100 x 200 ft., rein.-con., brick trucking terminal. $150,000. Bids 10/17 rejected. Binda & Bial, 2902 Bergenline Ave., Union City, engrs.-archts. CD 10/10—ENR 10/12.

Bids Asked After January 1

Mass., Holyoke—PLANT—Appleton Cleaners & Dyers, 301 Appleton St., 1 story, bsmnt., 30x80 ft. dry cleaning bldg., concrete, brick. Over $40,000 with equip. O. C. Vachon, 23 Dillon Ave., archt.

Bids Asked January 15

Mass., Springfield—PLANT—Westinghouse Electric & Mfg. Co., 653 Page Blvd., East Springfield, 4 steel, concrete plant addns., East Springfield. Over $40,000.

Bids Asked

N. J., Asbury Park—LAUNDRY—Owner, c/o I. M. Fenichel, archt., 724 5 Ave., New York, N. Y., brick, masonry laundry. $75,000.

★**Tex., Houston** — PLANT — Shell Oil Co. Inc., Shell Bldg., fluid catalytic high octane gasoline refining plant at Deer Park. $11,000,000. CD 9/12—ENR 9/14.

CONTRACTS AWARDED

Colo., Denver—PLANT—Gates Rubber Co., 999 S. Bway., 4 story mfg. bldg., to F. J. Kirchhof Constr. Co., 700 Lawrence St. Est. **$450,000.** CD 11/30—ENR 12/7.

Conn., Bridgeport — PLANT — Whipple & Choate Co., L. L. Gross, pres., 934 South Ave., brick, steel, masonry plant, to E & F Constr. Co., 94 Wells St., Bridgeport. **$75,000.** CD 9/26—ENR 9/28.

Conn., Stamford—WAREHOUSE—American Cyanamid Co., 1937 W. Main St., 1 story, 60x170 ft., and 60x180 ft., rein.-con. warehouse, W. Main St., to Chemical Constr. Co., 30 Rockefeller Plaza, New York, N. Y. Est. **$175,000.** CD 7/27—ENR 8/3.

Conn., Stratford — FACTORY — Baird Machine Co., 1700 Stratford Ave., 1 story, 70x125 ft., brick, steel factory, to Gellatly Constr. Co., 25 Housatonic Ave., Bridgport. **$40,000.** Bids 12/1. CD 11/28.

Ga., Columbus—ICE STORAGE—Buck Ice & Coal Co., 2403 12th Ave., ice storage, to Williams Constr. Co., 1032 13 St., **$40,050.** E. Oren Smith, 11 W. 12 St., archt.

Mass., Canton — FACTORY — Plymouth Rubber Co. Inc., Revere St., 2 story, 60 x 100 ft., brick factory, to Horn Brothers, Inc., 23 Miner St., Boston. Est. **$40,000.** A. J. Carpenter, 420 Boylston St., Boston, archt.

Mass., Springfield — PLANT — American Bosch Corp., 3664 Main St., 1 story, 90x115 ft. testing plant, Main St., to Ernest F. Carlson, Inc., 1694 Main St. Est. **$100,000.**

Mich., Detroit—PLANT—Douglas & Lomason Co., 5836 Lincoln Ave., 1 story, brick, steel, concrete plant addn., to Campbell Constr. Co., 3255 Goldner St. Est. **$75,000.**

Mich., Detroit—SERVICE—Pere Marquette Ry. Co., H. A. Cassil, ch. engr., General Motors Bldg., brick, steel, concrete service bldg. and soil can house, to A. A. Albrecht Co., 1204 Penobscot Bldg. Est. **$50,000.**

Mo., St. Louis — FACTORY — American Syrup & Sorghum Co., 4300 Geraldine Ave., Zone 20, 1 and part 2 story, 60x120 ft. and 45x60 ft., brick factory, concrete fdn., to Kloster Co., 5215 S. Grand Blvd., Zone 11. Est. **$40,000** with equip. J. A. Lorenz, 721 Newport Ave., Webster Groves, St. Louis, Zone 19, archt.

Mo., St. Louis—PLANT—Midwest Pipe & Supply Co., 1400 S. 2 St., Zone 4, 2 story, 50x60 ft., brick locker and washroom bldg. for plant, 1501-03 S. 2 St., to Fruin-Colon Contg. Co., 502 Merchants-Laclede Bldg., 408 Olive St., Zone 2. Est. **$40,000** with equip. P. R. Ramsay, 101 Arthur Ave., Webster Groves, Zone 19, archt.

N. J., Farmingdale—MANUFACTURING—United Canvas Prod. Co., 300 Fairmount Ave., Newark, 1 story, 60 x 300 ft., concrete block, steel mfg. bldg., to Arthur Venneri Const. Co., 259 N. Broad St., Elizabeth. **$75,000.** C. Steinbrenner, Capstan Ave., Beachwood, archt.

N. J., Kearny (br. Arlington)—PLANT—Swift & Co., 4115 S. Packard St., Chicago, Ill., 1 story, steel, corrugated asbestos solvent extraction bldg., to John W. Ferguson Co., 152 Market St., Paterson, **$40,000.**

N. J., New Brunswick—FACTORY—Johnson & Johnson Co., Highway 1, factory, to Rule Const. & Repair Co., 383 George St., **$300,000.**

INDUSTRIAL BLDGS. (Contracts Awarded, Cont'd.)

Pa., New Castle—FOOD LOCKER—F. W. Walker Co., 426 Croton Ave., P. O. Box 216, altering 2 story, brick bldg., installing 480 frozen food lockers, to Salem Engrg. Co., Salem, O. Est. **$40,000.**

Pa., Phila.—STORAGE—M. & M. Burlap Bag Co., 19-21-23 Washington Ave., storage bldg., to D. Goldman, 222 S. Front St., **$45,000.** Awarded 12/5.

Pa., Sharon — FACTORY — Westinghouse Electric & Mfg. Co., G. H. Parkman, dir. bldg. constr., Maloney Bldg., Pittsburgh, 1 story, 40 x 100 ft., brick, steel frame factory addn., to Jos. Bucheit & Sons Co., 819 Mahoning Ave., Youngstown, O. Est. **$60,000.** CD 12/7—ENR 12/14.

Tex., Dallas — WAREHOUSE — Texas Co., 2310 S. Lamar St., warehouse, to Carpenter Bros., 2310 S. Lamar St., approx. **$40,000.** CD 12/8—ENR 12/14.

Tex., Oak Cliff (mail Dallas)—REPAIR SHOP, etc.—Oak Cliff Auto Parts Co., 101 N. Marsalis St., brick, steel, concrete storage and mechanical repair shop, separate contracts. **$40,000.** CD 12/8—ENR 12/14.

Tex., Weslaco — PLANT — Christensen Products Corp., Weslaco, rein.-con., brick processing plant, to T. E. Carpenter, 413 Missouri St., **$45,000.** CD 1/28—ENR 2/10.

Wis., Eau Claire—FOUNDRY—White Machine Wks., 750 Wisconsin St., 1 and 2 story foundry, 3 story, 36x60 ft. pattern room, to Hoeppner-Bartlett Co., 631 E. Madison St. Est. **$300,000.** A. A. Wickland & Co., 205 N. Wacker Dr., Chicago, Ill., engrs. CD 11/21—ENR 11/30.

Ont., Forest—COLD STORAGE PLANT—Lambton Fruit Growers Cold Storage Co., Ltd., c/o F. Vance, Forest, 2 story, 50x60 ft., concrete cold storage plant addn., day labor, under supervision of H. Johnson, 7 Prince St. Est. **$50,000.** CD 9/12—ENR 9/14.

Ont., Leaside (Postal Dist. Toronto) — PLANT—Canada Wire & Cable Co. Ltd., Laird Dr., L-shaped, 250x350 ft., plant, concrete fdn., Laird Dr., to Bradford-Hoshal, Ltd., 1170 Yonge St., Toronto, about **$140,000.** CD 9/20—ENR 9/28.

Ont., Long Branch (Postal Dist. Toronto) —PLANT—Aristocrat Mfg. Co. Ltd., 7 Fraser Ave., Toronto, brick plant, Lakeshore Rd., north side, to Thomson Brothers, Ltd., 56 Greenville St., Toronto, about **$65,000.** CD 10/5—ENR 10/12.

UNCLASSIFIED

PROPOSED WORK

Arkansas—ELECTRIC POWER TRANSMISSION LINES—Arkansas Power & Light Co., Pine Bluff, 92 mi. electric power transmission lines, Stone Co. $100,000.

Conn., East Haven—ATHLETIC FIELD, etc.—Town, J. J. Sullivan, first selectmen, Town Hall, athletic field and playground, World War 2 Memorial, Dodge and Thompson St. $25,000. Site acquired.

★**†Fla., MacDill Field (br. Tampa)**—RUNWAYS, etc.—U. S. Eng., 575 Riverside Ave., Jacksonville, imprvs., exten. runways and parking stands. $990,000.

Georgia—SERVICE EXTENSIONS—Three Notch Elec. Membership Corp., Donaldsonville, service extens., Seminole Co. $60,000.

Illinois—SERVICE EXTENSIONS—Menard Elec. Coop., Petersburg, service extens., Menard Co. $50,000. CD 3/10—ENR 3/23.

Illinois—SERVICE EXTENSIONS—Southeastern Illinois Elec. Coop. Inc., Harrisburg, service extens., Saline Co. $73,000.

La., Cameron—TRANSMISSION LINES—Electric Co-operative, Cameron, 35 mi. rural electric power transmission lines. $30,000. Swanson-McGraw-Hooper, Balter Bldg., New Orleans, engrs.

†La., New Orleans—MOORING and DOCK FACILITIES—U. S. Eng., Avenue F and 25 St., Galveston, Tex., mooring and dock facilities. Over $25,000.

Mass., East Boston (sta. Boston) — HANGAR—Eastern Air Lines, Inc., General Logan Airport, East Boston, preliminary plans prefabricated hangar. General Logan Airport.

Mississippi — SERVICE EXTENSIONS — Magnolia Elec. Power Assoc., McComb, service extens., Pike Co. $75,000.

N. J., Asbury Park—BOARDWALK—City, City Hall, constructing 1 mi. boardwalk and repairing adjoining areas. $50,000.

New Mexico—SERVICE CONNECTIONS—Central Valley Elec. Coop. Inc., Artesia, service connections, Eddy Co. $30,000.

New Mexico—RURAL ELECTRIC LINES—Sierra Elec. Coop. Inc., Hillsboro, 90 mi. lines to serve 259 members, Sierra Co. $100,000.

★**†O., Cleveland** — AIRPORT LABORATORY—National Advisory Com. for Aeronautics, Cleveland Airport, construction and equipment at Aircraft Engine Research Laboratory, Cleveland Airport. $3,910,000.

Texas—SERVICE EXTENSIONS—Greenbelt Elec. Coop. Inc., Wellington, service extens., Collingsworth Co. $50,000.

Texas — PIPELINE — Texas-New Mexico Pipeline Co., 720 San Jacinto St., Houston, laying 30 mi. 12 in. pipeline loops between Crane and Houston. $100,000.

Tex., Andrews—PIPELINE—Humble Pipe Line Co., Humble Bldg., Houston, laying 4 in. connecting crude oil pipeline. $40,000.

†Tex., Houston—SPRINKLER SYSTEM—U. S. Eng., 25 St. and Avenue F, Galveston, water sprinkler sys., for Dickson Gun Plant. Over $25,000.

Tex., Plainview—AIRPORT—Town voted $50,000 bonds and Hale Co., Plainview, voted $125,000 bonds, airport. $100,000.

†Tex., Waco—HANGARS—U. S. Eng., 25 St. and Avenue F, Galveston, 3 bldgs. for hangars, Army Airfield. $80,000.

★**†Va., Langley Field** — AIRFIELD IMPROVEMENTS—National Advisory Com. for Aeronautics, Langley Field, airfield imprvs., equip. $835,000.

Wash., Seattle—PARAPET WALLS—City, County-City Bldg., Zone 4, parapet walls around Beacon Hill and Green Lake Reservoirs. $40,000 each. C. L. Wartelle, County-City Bldg., Zone 4, city engr.

Wisconsin — SERVICE EXTENSIONS — Pierce Pepin Elec. Coop., Ellsworth, service extens., Pierce Co. $60,000.

N. B., St. John—OIL BUNKERING FACILITIES—Dominion Govt., Ottawa, Ont., oil bunkering facilities at harbour. $150,000. National Harbours Bd., Ottawa, Ont., engr.

N. S., Dartmouth — RACING TRACK — Dartmouth Driving Assn., Dartmouth, 14 acre racing track. $25,000. J. Lorn Allan, Town Hall, engr.

Ont., Toronto—RADIO STATION—Can. Broadcasting Corp., Keefer Bldg., Montreal, Que., plans by D. G. McKinstry, Keefer Bldg., Montreal, Que., remodeling radio station. $40,000. M. L. Poole, 80 W. King St., engr.

Ont., Toronto—POWER DEVELOPMENT—Hydro-Electric Power Comn. of Ontario, University Ave., 8,000 hp. power development on Pic River. $300,000.

Que., Aylmer—GOLF CLUBHOUSE—W. H. Stewart, 7 Aylmer Rd., plans golf club house at Glenlea Course. $40,000.

Que., Montmorency (Postal Dist. Quebec City) — RAILWAY ELEVATOR — Quebec Railway Light & Power Co., 229 St. Joseph St., Quebec City, railway elevator, foot of Montmorency Falls. $50,000.

Que., Montreal—PARK, etc.—Municipality, J. A. Mongeau, city clk, park and playground, in Park Extension and Mile End Zones of city. $50,000. H. A. Gibeau, City Hall, dir. P. Wks.

Que., Noranda—HYDRO-ELECTRIC DEVELOPMENT — Quebec Hydro-Electric Comn., 107 W. Craig St., Montreal, exten. hydro-electric power development, Lake Decelles. $150,000. S. A. Baulne, 354 E. Ste. Catherine St., Montreal, engr.

Que., Thurso—DAM—Singer Mfg. Co., Ltd., 627 W. Dorchester St., Montreal, dam on White Fish River. $50,000.

Saskatchewan—TRANSMISSION LINES—Sask Power Comn., Regina, 1,700 mi. transmission lines.

BIDS ASKED

Bids Asked January 5

†Tex., Fort Worth — TAXIWAYS, etc. — Civil Aeronautics Admin., P. O. Box 1689, taxiways extens., grading, paving, drainage, seeding, sodding, marking and lighting taxiways. Extended date. Plans deposit $10. CD 11/17—ENR 11/23.

Ont., Niagara Falls — TUNNEL — M. T. Gray, mgr.-secy. Niagara Parks Comn. tunnel and concrete lining tunnels. $100,000. Plans deposit $25. H. G. Acres & Co., 2135 Culp St., engrs. CD 10/19—ENR 10/26.

Bids Asked January 15

New Jersey — EXPLORATORY BORINGS—State Hy. Dpt., S. Miller, Jr., comr., Trenton, making exploratory borings on Route 35, Sect. 39A, at and near Matawan Creek and Luppatcong Creek, Monmouth Co. Plans deposit $10; adv. ENR 12/28.

Bids Asked January 17

†Alaska, Ketchikan—POWER DEVELOPMENT—City, power development, 30 x 69 ft. rein.-con. power house, 25 x 32 ft. frame residence, H. B. Foss, Juneau, archt.; installing 4,200 ft. 28 and 30 in. welded steel pipe; 970 ft. 5 x 7 ft. tunnel from Upper Silvis Lake; clearing 11.3 mi. transmission line right-of-way from Beaver Falls to city; constructing 11.3 mi. transmission line. $400,000. **FWA.** R. W. Johnson, Hoge Bldg., Seattle 4, Wash., engr.; adv. ENR 12/21. CD 12/4—ENR 12/7.

LOW BIDDERS

†Calif., Benicia — MOTOR POOL — U. S. Eng., 1209 8 St., Sacramento, Zone 8, central motor pool at Benicia Arsenal, Job No. 1831, from Stolte, Inc., 8451 San Leandro St., Oakland, **$71,570.**

†Calif., Fort Ord—AUTOMATIC SPRINKLER SYSTEMS, etc.—U. S. Eng., 74 New Montgomery St., San Francisco, Dec. 12, automatic sprinkler sys., in motor repair shop and laundry, Job No. 1865, from Fire Protection Engrg. Co., 369 Pine St., San Francisco, **$26,953.**

Calif., San Francisco—FENDER LINES—Bd. State Harbor Comrs., Ferry Bldg., for constructing fender lines on south sides and ends of Piers 42 and 44, from J. D. Proctor Inc., 681 Market St., **$45,383.** CD 12/5.

†Calif., Tracy—RAILROAD—U. S. Eng., 1209 8 St., Sacramento, Zone 8, exten. railroad at Tracy Quartermaster Depot, Spec. 1012, from Guerin Bros., 208 S. Linden Ave., South San Francisco, **$25,080.**

†Tex., Fort Sam Houston—SIGNAL SYSTEM—U. S. Eng., Fort Sam Houston, installing nurses' signalling sys. at Brook General Hospital, from Paul Wright Electric Co., 419 E. Martin St., San Antonio, **$28,977.**

†Tex., Temple—SIGNAL SYSTEM—U. S. Eng., Fort Sam Houston, installing nurses' signal sys. at McCloskey General Hospital, from O. H. Cummins, 101 San Jacinto St., Austin, **$50,940.**

CONTRACTS AWARDED

†Calif., Wilmington — SPRINKLER SYSTEM, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, warehouse sprinkler sys., etc., equip. shed and wash slab at Los Angeles Port of Embarkation, No. 75, to Holmes Constr. Co., 5636 Matilija Ave., Van Nuys, **$55,595.**

†Fla., Pensacola—AIR STATION BLDG.—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C., shop for chrome hardening aircraft engine cylinders, at Naval Air Station, NOY 9374, to Dyson & Co., P. O. Box 22, **$188,860.**

Louisiana and **Tennessee** — GAS PIPELINES—Memphis Natural Gas Co., Sterick Bldg., Memphis, Tenn. and Monroe, La., laying 61½ mi. 18 and 20 in. natural gas looped lines between Monroe, La. and Memphis, Tenn., to N. A. Saigh Co., American Hospital & Life Ins. Bldg., San Antonio, Tex., **$236,000.** CD 12/6—ENR 12/14.

†Nev., Hawthorne—AIR CONDITIONING—Yards & Docks, Navy Dpt., 18 St. and Constitution Ave. N.W., Wash. 25, D. C., air conditioning for permanent inhibiting bldg., Naval Ammunition Depot, NOY 11504, to Carrier Corp., 625 Market St., San Francisco, Calif., **$200,000.**

†N. C., Fort Bragg—SPRINKLER SYSTEM—U. S. Eng., Post Office Bldg., Savannah, Ga., automatic sprinkler sys. for laundry bldgs., Bragg 2-45, to Industrial Automatic Sprinkler Co., 713 Bowe St., Richmond, Va., **$31,439.** Bids 11/27.

Texas—ELECTRIC LINES, etc.—Stamford Electric Cooperative, Inc., Stamford, 38 mi. electric lines and poles, Jones and Haskell Counties, to Teague & Goodwin Constr. Co., Sherman, **$34,080.** Est. $40,000. Awarded 12/8. Freese & Nichols, Capps Bldg., Fort Worth, engrs.

Tex., Borger—PIPELINE CARRIER—Phillips Petroleum Co., Bartlesville, Okla., laying 25 mi. 22 in. steel pipeline carrier, force account. **$90,000.**

†Tex., Fort Sam Houston — SPRINKLER SYSTEM—U. S. Eng., Fort Sam Houston, sprinkler sys., for Post Laundry area, Sec. W-41-154-45-57, to Automatic Sprinkler Sys. of America, 3923 McKinney St., Houston, approx. **$26,000.** Bids about 11/22. CD 11/15.

†Tex., Pyote — TAXIWAYS — U. S. Eng., Albuquerque, N. M., addnl. taxiways, Army Airfield, to Uvalde Constr. Co., 2400 Uvalde St., Dallas, approx. **$265,000.**

B. C., Quesnel—RADIO STATION—Dpt. Transport, Ottawa, Ont., radio remote control station, incl. power house, etc., to General Const. Co. Ltd., Granville Island, Vancouver, about **$100,000.** Bids 11/6. CD 10/25—ENR 11/2.

Ont., Biscotasing — DAM — International Nickel Co. of Canada, Ltd., 25 King St. W., Toronto, rein.-con. dam on Ramsay Lake, to Carrington Const. Co. Ltd., 319 Whittaker Ave., Sudbury, about **$60,000.**

P. E. I., Mount Pleasant—AERODROME—Dpt. Transport, Ottawa, Ont., aerodrome development, incl. grading, drainage, temporary taxi and parking area, steel matting, etc., to Curran & Briggs, Ltd., 203 Manning Chambers, Toronto, Ont., about **$35,000.**

Yukon Territory, Watson Lake—AERODROME CLEARING, etc.—Dpt. Transport, Ottawa, Ont., aerodrome clearing, stumping, grubbing, grading, etc., to General Const. Co. Ltd., Granville Island, Vancouver, B. C., about **$50,000.**

Proposal Advertisements see p. 21